THE PARALLAXES OF FIFTY STARS (SECOND LIST) DETERMINED AT SPROUL OBSERVATORY.

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WITH THE COÖPERATION OF

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I have given in the following pages the data of observation, the data of reduction and the reductions necessary to determine the parallaxes of fifty stars. It seems unnecessary to describe either the instruments or the methods employed in the work, further than to say that the intsruments used are the same that were used in determining the parallaxes of the first list published by the observatory in 1917 (Sproul Observatory Publication No. 4). The fields are photographed with a 24-inch visually corrected refracting telescope on Instantaneous Isochromatic plates. A ray filter which cuts off the violet and the red rays is placed very near the plate. These plates are measured and reduced as described in the publication referred to. The scale on the plate is 4″.685 to the quarter millimeter, the value of one turn of the screw on the measuring engine.

These results have been obtained through the efforts of several persons. The work has been done according to plans of the writer. Those participating in the work are: Professor John H. Pitman, Miss Hannah B. Steele, Dr. Samuel G. Barton, Reverend Walter A. Matos, Miss Marie S. Bender, and Miss Caroline H. Smedley. No one of us has been free to devote his entire time to it. I believe, in the body of the text, I have given specific credit to each for the part of the work he has performed. The reductions and many of the measures, as well as the routine work of marking the plates and keeping the records was performed by Miss Steele until 1916 when she went to Yerkes Observatory. Miss Bender did this work the following year and Miss Smedley, since the summer of 1917, has given much of her energies to the same work.

Some of the fields of comparison stars have been selected in ac-

cordance with the scheme described in Sproul Publication No. 4, (p. 10 *et seq.*). Other fields have been selected in the usual way, *i.e.*, the comparison stars were selected because of their location and brightness, the ideal being in every case to select stars of approximately the same brightness and to reduce the parallax star to the same magnitude by the occulting disc. In the final table of this paper, which contains a summary of the preceding results, I have marked with an asterisk those stars whose comparison fields were selected by the first method. I propose a little later to discuss more fully our experience with this method. In the detailed results which follow there is given for each star its *B.D.* number together with some other ordinarily used designations; its position for the epoch of 1900; its magnitude; its proper motion; and its spectrum. The magnitude and spectrum are taken if possible from the Annals of the Harvard College Observatory, Volume 50. The proper motions are taken, with few exceptions from Boss' Preliminary General Catalogue, or from the Cincinnati publications.

Two tables are given in connection with each star. The first contains the necessary observational data, and the quantities needed for reduction. The initials in columns 2 and 9, have the following signification: B. denotes Barton; Be., Bender; M., Miller; Ma., Matos; P., Pitman; S., Miss Steele; Sm., Miss Smedley. T., in column 4, is the time of observation given in 100 days from the mean date of the series; m., in column 6, is the "solution" of the plate given in quarter-millimeters; p., in column 7, is the weight of the plate assigned by the person who measures it. The second table contains the data for the position of the comparison stars measured in equatorial coordinates, the diameter of the stars in quarter-millimeters, and their *B.D.* numbers. Following this table are the normal equations and their solutions. The quantity μ in these equations is the proper motion given in seconds of arc per hundred days. *The quantity, π, is the relative parallax.*

An appropriation made from the income of a fund given by James C. Watson for Astronomical Research, has been made to me by the National Academy of Sciences for three successive years. These appropriations have been used to aid in the measurements and reduction of these plates. It is a pleasure to acknowledge these generous contributions from the Academy.

No. 1. B.D. —4°.62. Ho. 212 = 13 Ceti. ($0^h\ 31^m.1$; —4° 9′.)
Mag. 5.24. $\mu = 0^s.0272$; —0″.018. Spectrum F.

Ho. 212 is a triple star, the measures below refer to the close pair A B, which is a binary system with a period of 6.88 years. The combined image of the pair is sensibly round, and in the measures this image was bisected. It was measured in right ascension. Russell found for this star a hypothetical parallax of +0″.039. The brighter image, A, has been found to be a spectroscopic binary.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Nov. 17, 1915...	+0 8	P.	—6.25	—0.66	+0.123	1.0	+0.005	P.
Dec. 4, 1915...	1 2	Ma.	6.08	.81	.125	.5	.006	P.
Nov. 19, 1916...	+0 25	M.	—2.57	—0.69	.237	.7	—0.014	P.
Dec. 10, 1916...	0 42	M.	2.36	.85	.232	1.0	.006	P.
Aug. 19, 1917...	+0 15	P.	+0.16	+0.62	.309	1.0	—0.003	P.
Aug. 25, 1917...	0 50	M.	0.22	.54	.316	.6	.008	P.
Aug. 27, 1917...	—1 15	P.	0.24	.52	.304	1.0	+0.003	P.
Aug. 27, 1917...	0 30	P.	0.24	.52	.303	.7	.004	P.
Nov. 5, 1917...	—0 12	M.	+0.94	—0.52	.311	.5	+0.004	P.
Nov. 25, 1917...	+0 45	M.	1.14	.75	.322	.9	—0.005	P.
Dec. 22, 1917...	0 0	Ma.	1.41	.89	.316	.5	+0.007	P.
Jan. 1, 1918...	1 10	M.	1.51	.90	.318	.5	.008	P.
Aug. 14, 1918...	+0 15	Ma.	+3.76	+0.68	.400	.9	0.000	P.
Aug. 22, 1918...	0 10	D	3.84	.58	.393	.5	+0.008	P.
Aug. 22, 1918...	1 5	D	3.84	.58	.406	.8	—0.005	P.

Normal Equations:

$$+11.10000\ c - 1.4170\,\mu - 1.0340\,\pi = +3.2417.$$
$$+103.5299 + 13.0930 = +2.3872.$$
$$+5.1344 = +.0841.$$

Solution:

$$c = +0''.296.$$
$$\mu = +0''.121 \pm 0''.002.$$
$$\pi = +0''.048 \pm 0''.010.$$

p. e. unit weight, ±0″.019.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
2	+138.3	— 97.7	+0.326	0.47	
4	263.4	51.9	.197	0.40	
7	— 71.1	+181.0	.019	0.45	
10	149.7	61.5	.234	0.37	
12	271.0	108.3	.224	0.50	
π	0.0	0.0		0.67	—4°.62

No. 2. B.D. 37°.175. μ Andromedae. ($0^h\ 51^m.2$; $+37°\ 57'.$)
Mag. 3.94. $\mu = 0^s.0128$; $+0''.027$. Spectrum A_2.

This is one of the first type stars with large proper motion. Slocum obtained $0''.005 \pm 0''.007$ for its parallax. The measures were made in longitude.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Dec. 7, 1912...	0 0	S.	—7.30	—0.727	+0.053	.8	+0.011	S.
Dec. 9, 1912...	+0 4	B.	7.28	.751	.066	.8	—0.002	S.
Aug. 21, 1914...	+0 20	P.	—1.08	+0.870	+0.127	.8	—0.002	S.
Sept. 5, 1914...	0 10	P.	0.93	.713	.141	1.0	.016	S.
Nov. 20, 1914...	—0 41	P.	—0.17	—0.491	+0.121	.9	+0.003	S.
Nov. 22, 1914...	0 45	M.	0.15	.522	.128	.9	—0.005	S.
Aug. 17, 1915...	—0 49	P.	+2.53	+0.905	+0.136	.8	+0.018	S.
Aug. 22, 1915...	+0 4	P.	2.58	.863	.155	1.0	0.000	S.
Aug. 23, 1915...	—0 39	P.	2.59	.855	.157	1.0	—0.002	S.
Aug. 25, 1915...	0 40	P.	2.61	.836	.152	1.0	+0.003	S.
Sept. 2, 1915...	0 38	P.	2.69	.751	.150	1.0	.005	S.
Dec. 31, 1915...	—0 7	P.	+3.89	—0.931	+0.155	.9	—0.002	S.

Normal Equations:

$$+10.900\,c + 2.249\,\mu + 2.505\,\pi = +1.425.$$
$$+133.027 + 14.570 = +1.459.$$
$$+6.624 = +0.482.$$

Solution:

$$c = +0''.128.$$
$$\mu = +0''.038 \pm 0''.003.$$
$$\pi = +0''.032 \pm 0''.013.$$

p. e. unit weight, $\pm 0''.028$.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
3	+222.8	+63.6	+0.199	0.61	+37°.179
5	90.6	—53.3	.349	0.36	
7	— 54.4	+58.2	.154	0.77	+37°.174
9	259.0	—68.6	.301	0.74	+37°.168
π	10.5	17.4		1.01	+37°.175

No. 3. B.D. + 46°.243. OΣ 21. (0^h $57^m.3$; + 46° 50′.)
Mag. 6.36. $\mu = +0''.068$ in 104°.5. Spectrum F.

This is a close double star, which is, apparently, in rapid orbital motion. The measures are in longitude. No parallax of this star has been published.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Dec. 15, 1915...	+0 2	P.	−3.37	−0.736	+0.083	.7	+0.001	Be.
Dec. 22, 1915...	−0 5	P.	3.30	.811	.078	.8	.006	Be.
Aug. 19, 1916...	−0 37	P.	−0.89	+0.934	.103	1.0	−0.008	Be.
Aug. 25, 1916...	+0 5	Ma.	0.83	.889	.092	.8	+0.003	Sm.
Sept. 11, 1916...	−0 36	P.	0.66	.714	.095	1.0	.000	Be.
Dec. 17, 1916...	−0 6	M.	+0.31	−0.767	.104	.9	−0.008	Be.
Dec. 23, 1916...	0 2	Ma.	0.37	.828	.100	1.0	.004	Sm.
Jan. 6, 1917...	0 3	Ma.	0.51	.933	.091	.9	+0.005	Be.
Aug. 4, 1917...	−0 24	M.	+2.61	+1.004	.099	.8	+0.007	Sm.
Aug. 5, 1917...	1 34	P.	2.62	1.902	.102	.9	.004	Sm.
Aug. 10, 1917...	0 45	Ma.	2.67	0.985	.108	1.0	−0.002	Sm.

Normal Equations:

$$+9.8000\,c + 1.0110\,\mu + 1.5272\,\pi = +0.9466.$$
$$+37.6547 \quad +8.1249 \quad = +0.2262.$$
$$+7.5985 \quad = +0.1830.$$

Solutions:

$$c = +0''.096.$$
$$\mu = +0''.015 \pm 0''.003.$$
$$\pi = +0''.007 \pm 0''.008.$$

p. e. unit weight, ± 0″.018.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
5	+ 63.4	−262.3	+0.283	0.47	
8	203.5	11.2	.246	0.55	+46°.249
15	−244.6	+ 90.6	.249	0.56	+46°.231
18	31.9	246.0	.222	0.68	
π	0.0	0.0		0.56	+46°.243

No. 4. B.D. + 54°.236. Θ Cassiopeia. (1^h $5^m.0$; + 54° 37′.)
Mag. 4.52. $\mu = +0^s.0264; -0''.018$. Spectrum A_5.

The measures were in longitude. This is a first type star with large proper motion. Jacoby gives a parallax of $0''.234 \pm 0''.067$ for this star.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Nov. 30, 1912...	—0 59	B.	—8.76	—0.431	—0.014	1.0	0.000	S.
Dec. 24, 1912...	0 21	B.	8.52	.755	.013	.7	—0.002	S.
Aug. 14, 1915...	—0 2	P.	+1.11	+1.000	—0.055	.9	+0.001	S.
Aug. 17, 1915...	0 22	P.	1.14	0.991	.051	.9	—0.004	S.
Aug. 18, 1915...	0 18	P.	1.15	.987	.052	.7	.003	S.
Aug. 23, 1915...	+0 20	P.	1.20	.964	.055	.8	.000	S.
Aug. 25, 1915...	—0 14	P.	1.22	.952	.051	.8	.004	S.
Sept. 2, 1915...	0 4	P.	1.30	.896	.059	.8	+0.004	S.
Dec. 30, 1915...	+0 7	S.	+2.49	—0.811	—0.061	.8	+0.002	S.
Dec. 31, 1915...	0 12	P.	2.50	.822	.060	.8	.001	S.
Jan. 4, 1916...	0 16	M.	2.54	.858	.056	.6	—0.002	S.
Jan. 7, 1916...	0 6	S.	2.57	.882	.054	.7	.004	S.

Normal Equations:

$$9.500\,c - 1.603\,\mu + 1.334\,\pi = -0.456.$$
$$+152.905 + 7.726 = -0.539.$$
$$+7.214 = -0.100.$$

Solution:

$$c = -0''.049.$$
$$\mu = -0''.019 \pm 0''.001.$$
$$\pi = -0''.003 \pm 0''.003.$$

p. e. unit weight, $\pm 0''.009$.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
2	—152.8	+ 28.5	+0.751	0.38	
3	55.5	71.7	—0.235	0.27	
5	+ 45.3	6.9	.065	0.23	
7	163.0	—107.1	+0.549	0.24	
π	— 15.2	54.7		0.38	+54°.236

No. 5. B.D. + 49°.444. ϕ Persei. ($1^h\ 37^m.4$; + 50° 11′.)
Mag. 4.19. $\mu = +0^s.0029$; −0″.018. Spectrum Bp.

This star is a spectroscopic binary. The measures are in right ascension. No parallax of this star has been published.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Nov. 17, 1915...	−0 20	P.	−3.30	−0.43	−0.054	1.0	+0.009	Be.
Nov. 26, 1915...	+0 8	P.	3.21	.56	.041	.9	−0.005	Be.
Nov. 28, 1915...	−0 27	S.	3.19	.58	.040	.8	.006	Sm.
Aug. 19, 1916...	−0 38	P.	−0.54	+0.81	.043	.9	−0.006	Be.
Sept. 9, 1916...	0 23	P.	0.33	.58	.052	.9	+0.002	Be.
Sept. 11, 1916...	0 28	P.	0.31	.57	.055	.6	.004	Sm.
Dec. 10, 1916...	+0 12	M.	+0.59	−0.72	.061	.8	+0.001	Be.
Dec. 14, 1916...	−0 26	M.	0.63	.77	.063	.8	.003	Be.
Dec. 16, 1916...	+0 9	Ma.	0.65	.78	.052	.5	−0.008	Sm.
Aug. 5, 1917...	−1 32	P.	+2.97	+0.91	.065	.6	+0.004	Sm.
Aug. 12, 1917...	1 1	P.	3.04	.87	.062	1.0	.001	Sm.
Aug. 13, 1917...	1 13	P.	3.05	.86	.058	1.0	−0.003	Sm.

Normal Equations:

$$+9.8000\,c - 0.5370\,\mu + 0.8890\,\pi = -0.5256.$$
$$+53.3666 + 9.7531 = -0.1134.$$
$$+5.0110 = -0.0599.$$

Solution:

$$c = -0''.054.$$
$$\mu = -0''.016 \pm 0''.003.$$
$$\pi = +0''.021 \pm 0''.010.$$

p. e. unit weight, ± 0″.017.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
1	−191.9	+200.8	+0.214	0.52	+50°.330
6	+ 70.2	77.7	.221	0.44	
10	192.2	22.8	.224	0.49	+49°.450
14	85.8	−220.3	.180	0.49	+49°.446
20	−204.1	160.2	.161	0.24	+49°.437
π	0.0	0.0		0.53	+49°.444

No. 6. B.D. + 1°.347. Σ 186. (1^h $50^m.7$; + 1° 21′.)
Mag. 6.18. $\mu = +0^s.0105$; + 0″.182. Spectrum F.

This is a binary of long period. The combined image of the two components was bisected in making the measures. The image is sensibly round. The measures are in longitude. Russell publishes a hypothetical parallax of 0″.025 for this star.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Dec. 26, 1915...	+0 46	M.	—2.80	—0.912	—0.027	.9	—0.001	Sm.
Dec. 31, 1915...	0 5	P.	2.75	.940	.024	.5	.004	Sm.
Jan. 4, 1916...	0 21	M.	2.71	.982	.033	.6	+0.005	Be.
Aug. 13, 1916...	—0 46	P.	—0.49	+ .917	+0.014	.6	+0.001	Be.
Sept. 3, 1916...	+0 42	M.	0.28	.709	.014	1.0	.002	Be.
Sept. 16, 1916...	0 34	M.	0.15	.532	.023	.5	—0.007	Sm
Dec. 10, 1916...	+0 52	M.	+0.70	— .781	+0.011	.9	+0.003	Be.
Dec. 19, 1916...	0 58	M.	+0.79	.865	.022	.5	—0.007	Sm.
Jan. 16, 1917...	—0 22	M.	+1.07	.984	.016	1.0	+0.001	Be.
Aug. 25, 1917...	—0 42	M.	+3.28	+ .812	+0.064	1.0	—0.005	Sm.
Aug. 27, 1917...	0 18	P.	3.30	.792	.054	1.0	+0.005	Sm

Normal Equations:

$$+8.5000\,c + 2.5050\,\mu - 0.8702\,\pi = +0.1327.$$
$$+39.0238 + 8.0698 = +0.5658.$$
$$+6.0956 = +0.1384.$$

Solution:

$$c = +0''.013.$$
$$\mu = +0''.055 \pm 0''.003.$$
$$\pi = +0''.042 \pm 0''.006.$$

p. e. unit weight, ± 0″.013.

COMPARISON STARS.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
1	—190.6	—183.9	+0.328	0.52	+0°.308
4	+210.5	150.4	.144	0.47	+0°.314
7	11.7	+221.7	.307	0.61	+1°.348
8	129.8	62.3	.221	0.41	+1°.350
π	0.0	0.0		0.82	+1°.347

No. 7. B.D. + 41°.395. γ^1 (A) and γ^2 (BC) Andromedae.
(1^h $57^m.8$; + 41° 51′.) Mag. 2.28 — 5.08.

$$\mu = \begin{cases} + 0^s.0042 & ; - 0''.052. \\ 1 & 1. \end{cases}$$ **Spectrum K_p.**

The measures are in longitude. BC is a binary with a period of about 55 years. Flint found the parallax of γ^1 to be $-0''.015 \pm 0''.027$, Chase, $0''.000 \pm 0''.009$, Russell (Hypothetical), $+ 0''.015$. The same comparison field is used for γ^1 and for γ^2.

TABLE AND SOLUTIONS FOR γ^1 (A) ANDROMEDAE.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Aug. 13, 1916...	—0 20	P.	—2.20	+1.002	+0.192	.8	—0.004	P.
Aug. 17, 1916...	0 0	P.	2.16	0.990	.200	.9	.012	P.
Sept. 17, 1916...	0 45	P.	1.85	.746	.190	.9	.002	P.
Sept. 17, 1916...	0 22	P.	1.85	.746	.176	.9	+0.012	P.
Sept. 20, 1916...	0 0	Ma.	1.82	.709	.170	1.0	.018	P.
Dec. 19, 1916...	0 0	M.	—0.92	—0.692	.194	.7	—0.008	P.
Jan. 2, 1917...	+0 6	M.	0.78	.843	.196	1.0	.010	P.
Jan. 6, 1917...	—0 8	Ma.	0.74	.876	.176	.6	+0.010	P.
Jan. 8, 1917...	0 22	P.	0.72	.892	.188	.7	—0.002	P.
Aug. 5, 1917...	—1 8	P.	+1.37	+1.014	.179	.5	+0.024	P.
Aug. 12, 1917...	0 46	P.	1.44	1.005	.226	.8	—0.023	P.
Aug. 26, 1917...	0 57	P.	1.58	0.946	.206	.9	.002	P.
Dec. 30, 1917...	+0 4	M.	+2.84	—0.812	.200	1.0	+0.001	P.
Jan. 5, 1918...	—0 12	Ma.	2.90	.866	.207	.5	—0.006	P.
Jan. 13, 1918...	+0 1	M.	2.98	.924	.190	.8	+0.011	P.

Normal Equations:

$$\begin{aligned} + 12.0000\, c - 1.2930\, \mu + 1.4452\, \pi &= + 2.3132. \\ + 43.6553 - 8.0880 &= - 0.0992. \\ + 9.0978 &= + 0.2846. \end{aligned}$$

Solution:

$$\begin{aligned} c &= + 0''.193. \\ \mu &= + 0''.020 \pm 0''.006. \\ \pi &= + 0''.021 \pm 0''.014. \end{aligned}$$

p. e. unit weight, $\pm 0''.037$.

COMPARISON STARS.

No.	*X.*	*Y.*	Dependence.	Diameter.	B. D. No.
3	— 71.6	—141.0	+0.259	0.56	
6	+ 75.3	+183.1	.249	0.64	+41°.399
10	163.6	—110.1	.056	0.44	
12	— 92.9	36.3	.319	0.41	
14	+175.8	+ 74.6	.117	0.42	
γ^1	0.0	0.0		1.01	+41°.395

TABLE AND SOLUTIONS FOR γ^2 (B) ANDROMEDAE.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, *T.*	Parallax Factor, *P.*	Solution, *m.*	Wt., *p.*	Res., *v.*	Measured by.
Aug. 13, 1916...	—0 20	P.	—2.11	+1.002	—0.048	1.0	—0.007	P.
Aug. 17, 1916...	0 0	P.	2.07	0.990	.052	.9	.003	P.
Sept. 17, 1916...	0 45	P.	1.76	.746	.053	.5	.001	P.
Sept. 17, 1916...	0 22	P.	1.76	.746	.066	.9	+0.012	P.
Sept. 20, 1916...	0 0	Ma.	1.73	.709	.066	.8	.012	P.
Dec. 19, 1916...	0 0	M.	0.83	—0.692	.054	.8	0.000	P.
Jan. 2, 1917...	+0 6	M.	0.69	.843	.046	.7	—0.008	P.
Jan. 6, 1917...	—0 8	Ma.	0.65	.876	.050	.8	.004	P.
Jan. 8, 1917...	0 22	P.	0.63	.892	.054	.7	0.000	P.
Aug. 12, 1917...	—0 46	P.	+1.53	+1.005	.044	.9	—0.003	P.
Aug. 26, 1917...	0 57	P.	1.67	0.946	.041	.7	.006	P.
Dec. 30, 1917...	+0 4	M.	2.93	—0.812	.055	.8	+0.009	P.
Jan. 5, 1918...	—0 12	Ma.	2.99	.866	.042	.5	—0.004	P.
Jan. 13, 1918...	+0 1	M.	3.07	.924	.047	.8	+0.001	P.

Normal Equations:

$$\begin{aligned} +10.8000\,c - 1.0880\,\mu + 0.7806\,\pi &= -0.5576. \\ +39.4766 \quad -8.0400 \quad &= +0.1329. \\ +8.2397 \quad &= -0.0484. \end{aligned}$$

Solution:

$$c = -0''.051.$$
$$\mu = +0''.010 \pm 0''.004.$$
$$\pi = +0''.005 \pm 0''.008.$$

p. e. unit weight, $\pm 0''.021$.

COMPARISON STARS.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
3	— 71.6	—141.0	+0.255	0.56	
6	+ 75.3	+183.1	.251	0.64	+41°.399
10	163.6	—110.1	.059	0.44	
12	— 92.9	36.3	.314	0.41	
14	+175.8	+ 74.6	.121	0.42	
γ^2	2.9	1.0		0.47	

No. 8. B.D. + 67°.191. Bradley 3227. (2^h $7^m.5$; + 67° 13′.)
Mag. 7.8. $\mu = +0^s.0902$; — 0″.299. Spectrum K.

The measures of this star were made in longitude. Smith-Elkin found (Heliometer) a parallax for this star of + 0″.09 ± 0″.041. Adams found a parallax for it (Spectroscopic) of + 0″.044.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Sept. 10, 1915...	+0 27	Ma.	—4.33	+0.957	—0.193	.9	—0.004	Be.
Sept. 13, 1915...	—0 16	P.	4.30	.939	.198	1.0	+0.002	Be.
Sept. 15, 1915...	0 52	P.	4.28	.925	.195	.9	—0.001	Be.
Sept. 16, 1915...	0 2	M.	4.27	.918	.208	1.0	+0.012	Be.
Dec. 30, 1915..:	—0 10	S.	—3.22	—0.615	.184	1.0	—0.008	Be.
Sept. 17, 1916...	+0 10	P.	—0.60	+0.905	.112	.6	—0.011	Be.
Oct. 7, 1916...	0 34	M.	0.40	.701	.126	.5	+0.005	Bc.
Oct. 10, 1916...	—0 14	P.	0.37	.663	.124	.9	.003	Be.
Jan. 8, 1917...	+0 4	P.	+0.53	—0.739	.116	.7	—0.002	Be.
Jan. 12, 1917...	—0 8	P.	0.57	.782	.128	1.0	+0.010	Be.
Jan. 12, 1917...	+0 19	P.	0.57	.782	.103	.8	—0.015	Be.
Jan. 16, 1917...	0 12	M.	0.61	.824	.106	.5	.012	Be.
Jan. 30, 1917...	0 36	P.	0.75	.932	.126	1.0	+0.010	Be.
Sept. 12, 1917...	+0 2	Ma.	+3.00	+0.942	.044	.7	—0.006	Sm.
Sept. 19, 1917...	0 22	Ma.	3.07	.892	.047	.5	.003	Sm.
Jan. 5, 1918...	+0 13	Ma.	+4.15	—0.700	.059	.9	+0.013	Sm.
Jan. 10, 1918...	0 2	M.	4.20	.759	.046	.9	.001	Sm.
Jan. 20, 1918...	—0 1	M.	4.30	.859	.037	.9	— .007	Sm.

Normal Equations:

$$+14.7000\,c - 2.9600\,\mu + 0.1763\,\pi = -1.8337.$$
$$+141.4308 - 21.4438 = +2.9503.$$
$$+10.1634 = -0.3384.$$

Solution:

$$c = -0''.121.$$
$$\mu = +0''.094 \pm 0''.003.$$
$$\pi = +0''.052 \pm 0''.010.$$

p. e. unit weigth, $\pm 0''.026$.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
1	—239.9	+253.7	+0.185	0.62	+67°.187
6	+205.0	37.8	.202	0.48	
12	5.6	—163.1	.486	0.81	+66°.192
15	19.8	+193.4	.127	0.50	
π	0.0	0.0		0.77	+67°.191

No. 9. B.D. + 24°.375–6. Bradley 360–1. ($2^h\ 31^m.2$; + 24° 12′.8.)

Mag. 7.3–6.9 $\mu = \begin{cases} +0^s.0111; -0''.009. \\ +0^s.0102; -0''.010. \end{cases}$ **Spectrum F, F_5.**

The measures are in longitude. The components have a common proper motion. Other published parallaxes are

Von Maanen, (photographic), $+0''.008 \pm 0''.015$, (360).
$+0''.028 \pm 0''.014$, (361).
Adams, (spectroscopic), $+0''.018$, (360).
$+0''.028$, (361).

The same comparison field was used for both components.

Table and Solutions for Bradley 361.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Sept. 19, 1915...	—0 34	M.	—2.28	+0.735	—0.093	.8	0.000	Be.
Sept. 21, 1915...	0 34	P.	2.26	.710	.086	.7	—0.007	Be.
Sept. 23, 1915...	0 30	P.	2.24	.684	.098	.8	+0.005	Be.
Dec. 21, 1915...	+1 10	M.	—1.35	—0.704	.096	.5	0.000	Sm.
Dec. 26, 1915...	1 21	M.	1.30	.762	.104	.9	+0.007	Be.
Dec. 30, 1915...	0 9	S.	1.26	.803	.092	.8	—0.005	Sm.
Feb. 3, 1916...	1 21	M.	0.91	.986	.094	.8	.002	Be.
Sept. 9, 1916...	+0 10	P.	+1.28	+0.835	.068	.8	—0.003	Be.
Sept. 13, 1916...	0 16	Ma.	1.32	.794	.073	1.0	+0.002	Be.
Sept. 16, 1916...	0 54	M.	1.35	.760	.074	.5	.003	Sm.
Dec. 31, 1916...	+0 59	M.	+2.41	—0.821	.072	1.0	—0.003	Sm.
Jan. 19, 1917...	—0 3	P.	2.60	.955	.078	.9	+0.003	Be.
Jan. 20, 1917...	0 16	Ma.	2.61	.959	.074	.9	—0.001	Sm.

Normal Equations:

$$+10.4000\,c + 1.3390\,\mu - 1.5384\,\pi = -0.8766.$$
$$+38.1003 \quad -4.8455 \quad = +0.0831.$$
$$+7.0229 \quad = +0.1458.$$

Solution:

$$c = -0''.084.$$
$$\mu = +0''.028 \pm 0''.002.$$
$$\pi = +0''.030 \pm 0''.005.$$

p. e. unit weight, $\pm 0''.012$.

COMPARISON STARS.

No.	*X.*	*Y.*	Dependence.	Diameter.	B. D. No.
2	— 47.6	—166.9	+0.005	0.64	
4	289.0	31.5	.373	0.60	
8	+145.6	49.3	.205	0.42	
10	188.0	+ 53.4	.417	0.30	
Br. 361	0.0	0.0		1.10	+24°.376

TABLE AND SOLUTIONS FOR BRADLEY 360.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, *T.*	Parallax Factor, *P.*	Solution, *m.*	Wt., *p.*	Res., *v.*	Measured by.
Sept. 19, 1915...	—0 34	M.	—2.29	+0.735	—0.056	.8	+0.001	Be.
Sept. 21, 1915...	0 34	P.	2.27	.710	.056	.5	.001	Be.
Sept. 23, 1915...	0 30	P.	2.25	.684	.051	.8	—0.004	Be.
Dec. 21, 1915...	+1 10	M.	—1.36	—0.704	.062	.9	+0.002	Sm.
Dec. 26, 1915...	1 21	M.	1.31	.762	.064	.8	.004	Be.
Dec. 30, 1915...	0 9	S.	1.27	.803	.054	1.0	—0.006	Sm.
Feb. 3, 1916...	1 21	M.	0.92	.986	.062	.5	+0.003	Be.
Sept. 9, 1916...	+0 10	P.	+1.27	+0.835	.038	.9	+0.005	Be.
Sept. 13, 1916...	0 16	Ma.	1.31	.794	.029	.8	—0.004	Be.
Sept. 16, 1916...	0 54	M.	1.34	.760	.032	1.0	.001	Sm.
Jan. 16, 1917...	+0 57	M.	+2.56	—0.940	.038	.5	0.000	Sm.
Jan. 19, 1917...	—0 3	P.	2.59	.955	.035	.8	—0.003	Be.
Jan. 20, 1917...	0 16	Ma.	2.60	.959	.040	.5	+0.002	Sm.

Normal Equations:

$$+9.8000\,c - 0.5860\,\mu - 0.6158\,\pi = -0.4620.$$
$$+32.5387 \quad -1.8737 \quad = +0.2081.$$
$$+6.4407 \quad = +0.0640.$$

Solution:

$$c = -0''.046.$$
$$\mu = +0''.028 \pm 0''.002.$$
$$\pi = +0''.034 \pm 0''.004.$$

p. e. unit weight, $\pm 0''.011$.

Comparison Stars.

No.	*X.*	*Y.*	Dependence.	Diameter.	B. D. No.
2	— 47.6	—166.9	—0.001	0.64	
4	289.0	31.5	+0.394	0.60	
8	+145.6	49.3	.195	0.42	
10	188.0	+ 53.4	.412	0.40	
Br. 360	— 8.1	0.7		0.95	+24°.375

No. 10. B.D. + 49°.857. ι Persei. ($3^h\ 2^m.0$; + 49° 14′.)
Mag. 4.17. $\mu = +0^s.1292$; — 0″.080. Spectrum G.

The measures are in longitude. This star has a radial velocity of 50.5 km. per second. Other published parallaxes are

Flint + 0″.10 ± 0″.033, (Transits).
Chase + 0″.11 ± 0″.027, (Heliometer).
Adams 0″.096, (Spectroscopic).

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, *T.*	Parallax Factor, *P.*	Solution, *m.*	Wt., *p.*	Res., *v.*	Measured by.
Jan. 1, 1914...	—0 7	P.	—3.08	—0.668	—0.231	.7	+0.004	S.
Jan. 6, 1914...	0 10	P.	3.03	.730	.228	1.0	.003	S.
Jan. 14, 1914...	+0 6	P.	2.95	.816	.214	.8	—0.008	S.
Sept. 8, 1914...	—0 14	P.	—0.58	+0.958	.018	.7	+0.003	S.
Sept. 21, 1914...	0 1	P.	0.45	.864	.009	1.0	.000	S.
Sept. 22, 1914...	+0 2	P.	0.44	.855	.002	.7	—0.006	S.
Jan. 1, 1915...	—0 4	P.	+0.57	—0.664	+.011	.7	+0.011	S.
Jan. 4, 1915...	+0 3	P.	0.60	.702	.043	.5	—0.020	S.
Jan. 5, 1915...	0 12	M.	0.61	.714	.017	.7	+0.007	S.
Aug. 22, 1915...	—0 42	P.	+2.90	+1.011	.225	1.0	—0.001	S.
Aug. 23, 1915...	0 42	P.	2.91	1,010	.230	.9	.006	S.
Aug. 25, 1915...	0 48	P.	2.93	1.008	.218	.8	+0.008	S.

Normal Equations:

$$+9.500\,c + 0.279\,\mu + 1.693\,\pi = +0.064.$$
$$+46.923 + 11.695 = +3.496.$$
$$+6.944 = +0.975.$$

Solution:

$$c = +0''.000.$$
$$\mu = +0''.319 \pm 0''.005.$$
$$\pi = +0''.120 \pm 0''.012.$$

p. e. unit weight, $\pm 0''.024$.

Comparison Stars.

No.	*X.*	*Y.*	Dependence.	Diameter.	B. D. No.
1	—213.0	—160.2	+0.355	0.58	
2	7.2	+ 30.0	.376	0.52	
3	+120.0	10.6	—0.083	0.71	
6	+100.3	119.6	+0.352	0.50	
π	— 53.0	— 4.4		0.63	+49°.857

No. 11. B.D. + 0°.542. Σ 367. ($3^h\ 9^m.0$; + 0° 21′.7.) Mag. 8.0–8.0.

The measures are in longitude. The components are separated by 0″.95. The combined image of the components if not round is very slightly elongated. We attempted to bisect the combined image. No other parallaxes of this star have been published.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, *T.*	Parallax Factor, *P.*	Solution, *m.*	Wt., *p.*	Res., *v.*	Measured by.
Sept. 9, 1915...	—0 16	P.	—2.79	+0.857	—0.138	.8	—0.006	Be.
Sept. 16, 1915...	+0 32	M.	2.72	.786	.146	.5	+0.002	Be.
Sept. 23, 1915...	—0 13	P.	2.65	.705	.153	.9	.008	Be.
Jan. 23, 1916...	+0 12	S.	—1.43	—0.962	.149	.9	—0.003	Be.
Jan. 24, 1916...	0 28	P.	1.42	.965	.152	1.0	.000	Be.
Sept. 20, 1916...	—0 16	Ma.	+0.98	+0.732	.140	.9	+0.001	Be.
Sept. 25, 1916...	0 6	M.	1.03	.669	.132	.5	—0.008	Be.
Jan. 6, 1917...	+0 12	Ma.	+2.06	—0.861	.147	1.0	0.000	Be.
Jan. 20, 1917...	—0 5	Ma.	2.20	.953	.140	.6	—0.007	Sm. Be.
Jan. 28, 1917...	+0 50	M.	2.28	.979	.148	.6	+0.001	Sm. Be.
Feb. 14, 1917...	1 15	P.	2.45	.971	.158	.5	.011	Be.

Normal Equations:

$$+8.2000\,c - 1.3140\,\mu - 1.6301\,\pi = -1.1980.$$
$$+34.7662 \quad -6.6250 \quad = +0.2040.$$
$$+6.1467 \quad = +0.2605.$$

Solution:

$$c = -0''.145.$$
$$\mu = +0''.007 \pm 0''.003.$$
$$\pi = +0''.026 \pm 0''.008.$$

p. e. unit weight, $\pm 0''.017$.

COMPARISON STARS.

No.	*X.*	*Y.*	Dependence.	Diameter.	B. D. No.
2	—221.2	—156.8	+0.402	0.70	
5	+180.8	+124.4	.349	0.88	+0°.547
6	150.8	97.6	.284	0.49	+0°.546
9	143.6	— 49.2	—0.035	0.55	+0°.545
π	0	0		0.97	+0°.542

No. 12. B.D. + 31°.642. o Persei = β 535. ($3^h\,38^m$; + 31° 58′.)
Mags. 4.0-8.5. $\mu = +0^s.0008$; $-0''.024$. Spectrum B_1.

The measures are in longitude. The components of this star are separated by 0″.83. The combined image of the components seemed round. No other parallaxes have been published.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, *T.*	Parallax Factor, *P.*	Solution, *m.*	Wt., *p.*	Res., *v.*	Measured by.
Oct. 7, 1916...	+0 3	M.	—2.64	+0.704	+0.094	1.0	0.000	Sm.
Oct. 10, 1916...	—0 6	P.	2.61	.666	.090	.9	+0.004	Sm.
Dec. 31, 1916...	+0 41	M.	—1.79	—0.636	.092	1.0	—0.005	Sm.
Jan. 12, 1917...	0 23	P.	1.67	.780	.080	.5	+0.006	Sm.
Jan. 30, 1917...	0 23	M.	1.49	.931	.087	.9	—0.002	Sm.
Sept. 19, 1917...	+0 26	Ma.	+0.83	+0.893	.103	.5	—0.005	Sm.
Oct. 2, 1917...	—0 25	P.	0.96	.766	.094	.7	+0.003	Sm.
Oct. 6, 1917...	0 12	M.	1.00	.719	.091	.9	.006	Sm.
Oct. 6, 1917...	+0 26	M.	1.00	.719	.106	1.0	—0.009	Sm.
Jan. 1, 1918...	+1 16	M.	+1.87	—0.646	.088	1.0	+0.001	Sm.
Feb. 7, 1918...	1 10	M.	2.24	.968	.086	1.0	.001	Sm.
Feb. 13, 1918...	0 14	M.	2.30	.984	.086	1.0	.001	Sm.

Normal Equations:

$$+10.4000\,c + 0.4420\,\mu - 0.8097\,\pi = +0.9505.$$
$$+36.3912 \quad -3.7729 \quad = +0.0411.$$
$$+6.4979 \quad = -0.0357.$$

Solution:

$$c = +0''.092.$$
$$\mu = +0''.003 \pm 0''.003.$$
$$\pi = +0''.030 \pm 0''.006.$$

p. e. unit weight, $\pm 0''.015$.

COMPARISON STARS.

No.	*X.*	*Y.*	Dependence.	Diameter.	B. D. No.
1	+193.6	+117.6	+0.282	0.88	+31°.645
4	44.4	— 91.6	.253	0.56	
8	— 26.0	129.2	.243	0.68	
10	289.2	+ 75.2	.222	0.49	
π	0	0		0.89	+31°.642

No. 13. B.D. + 34°.796. Greenwich$_{60}$ 284 = Lalande 7443. ($3^h\ 56^m.5$; + 35° 2′.) Mag. 8.5. $\mu = 0^s.1420$; — 1″.354.

The measures are in longitude. Other parallaxes published are:

Russell —0″.011 ± 0″.014, (Photographic).
Schlesinger + 0″.039 ± 0″.013, (Photographic).
Flint —0″.020 ± 0″.055, (Transits).
Chase + 0″.04 ± 0″.026, (Heliometer).
Adams + 0″.042, (Spectroscopic).

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, *T.*	Parallax Factor, *P.*	Solution, *m.*	Wt., *p.*	Res., *v.*	Measured by.
Sept. 21, 1914...	—0 6	P.	—1.75	+0.915	+0.016	1.0	—0.003	S.
Sept. 22, 1914...	0 9	P.	1.74	.908	.016	.7	.003	S.
Sept. 27, 1914...	0 7	S.	1.69	.869	.019	.9	.002	S.
Sept. 28, 1914...	0 14	P.	1.68	.859	.016	.8	+0.001	S.
Oct. 1, 1914...	0 40	P.	1.65	.830	.018	.9	.002	S.
Jan. 1, 1915...	—0 8	P.	—0.73	—0.578	.069	.9	+0.005	S.
Jan. 5, 1915...	+0 7	M.	0.69	.633	.074	1.0	.003	S.
Jan. 8, 1915...	—0 6	P.	0.66	.673	.082	.7	—0.003	S.
Sept. 9, 1915...	+0 7	P.	+1.78	+0.984	.309	.8	—0.002	S.
Sept. 24, 1915...	—0 43	Ma.	1.93	.896	.311	.9	+0.007	S.
Feb. 19, 1916...	+0 52	Ma.	+3.41	—0.985	.416	.8	—0.004	S.
Feb. 21, 1916...	0 55	P.	3.43	.988	.415	.7	.001	S.

Normal Equations:

$$+10.100\,c - 0.837\,\mu + 2.257\,\pi = +1.417.$$
$$+37.146 \quad -7.390 \quad = +2.853.$$
$$+7.279 \quad = -0.178.$$

Solution:

$$c = +0''.144.$$
$$\mu = +0''.390 \pm 0''.002.$$
$$\pi = +0''.072 \pm 0''.005.$$

p. e. unit weight, $\pm 0''.012$.

Comparison Stars.

No.	*X.*	*Y.*	Dependence.	Diameter.	B. D. No.
1	—161.7	—89.5	+0.264	0.63	
3	164.8	+55.2	.247	0.48	
5	+137.3	64.2	.240	0.45	
6	189.1	—30.0	.249	0.52	
π	— 3.3	2.0		0.76	+34°.796

No. 14. B.D. + 53°.794. Σ 566. ($4^h\ 32^m.0$; + 53° 16′.6.). Mag. 5.44. $\mu = +0^s.0075$; — 0″.090. Spectrum A.

This is a triple star. The distance between AB is 0″.21 and between AB and C is 1″.58. The combined image of these three stars was elongated. We attempted to measure to the center of gravity of this elongated image. The measures are in longitude. No other parallaxes of this star have been published.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, *T.*	Parallax Factor, *P.*	Solution, *m.*	Wt., *p.*	Res., *v.*	Measured by.
Feb. 21, 1915...	+0 8	M.	—6.91	—0.964	+0.096	1.0	—0.004	Sm.
Sept. 27, 1915...	—0 36	S.	—4.73	+0.947	.101	1.0	+0.004	Sm.
Oct. 9, 1915...	0 40	M.	4.61	.856	.107	1.0	—0.003	Sm.
Jan. 23, 1916...	—0 34	S.	—3.55	—0.727	.089	.8	+0.010	Sm.
Sept. 17, 1916...	—0 30	P.	—1.17	+0.989	.122	.7	—0.011	Sm.
Sept. 20, 1916...	0 0	Ma.	1.14	.978	.106	.8	+ .005	Sm.
Jan. 2, 1917...	—0 23	M.	—0.10	—0.447	.098	1.0	+0.008	Sm.
Jan. 6, 1917...	0 18	Ma.	0.06	.507	.096	.5	.010	Sm.
Jan. 28, 1917...	+0 2	M.	+0.16	.791	.121	1.0	—0.016	Sm.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Sept. 19, 1917...	0 0	Ma.	+2.50	+0.983	.124	.5	—0.007	Sm.
Oct. 2, 1917...	—0 30	P.	2.63	.910	.114	.8	+0.003	Sm.
Oct. 2, 1917...	0 0	P.	2.63	.910	.119	.5	—0.002	Sm.
Oct. 6, 1917...	+0 7	M.	2.67	.878	.114	1.0	+0.003	Sm.
Jan. 21, 1918...	+0 5	M.	+3.74	—0.709	.114	1.0	—0.003	Sm.
Feb. 8, 1918...	—0 41	P.	3.92	.890	.108	.5	+0.003	Sm.
Feb. 11, 1918...	0 34	P.	3.95	.912	.108	.9	.003	Sm.

Normal Equations:

$$+13.0000\,c - 4.1970\,\mu + 0.8183\,\pi = +1.4043.$$
$$+158.4493 - 2.4220 = -0.1993.$$
$$+9.3634 = +0.1271.$$

Solution:

$$c = +0''.108.$$
$$\mu = +0''.008 \pm 0''.002.$$
$$\pi = +0''.021 \pm 0''.007.$$

p. e. unit weight, $\pm 0''.023$.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
2	+135.6	—159.2	+0.242	0.58	+52°.869
3	— 59.2	193.2	.217	0.60	+52°.862
10	+156.4	+ 79.2	.280	.042	
15	—244.0	223.2	.261	0.59	+53°.789
π	0.0	0.0		0.68	+53°.794

No. 15. B.D. + 53°.3796 = Δ 4. ($4^h\ 32^m.5$; + 53° 17′.)
Mag. 8.8–9.8.

No parallaxes of this star have been published. The same plates and same set of comparison stars were used to derive the parallax of Σ 566 and that of Δ 4. We have designated the brighter component of Δ 4 by Δ 4 and the fainter component by Δ 4′.

TABLE AND SOLUTIONS FOR $\Delta 4$.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Feb. 21, 1915...	+0 8	M.	—6.91	—0.964	+0.024	.5	—0.005	Sm.
Sept. 27, 1915...	—0 36	S.	—4.73	+0.947	.022	9	+0.003	Sm.
Oct. 9, 1915...	0 40	M.	4.61	.856	.033	.7	—0.008	Sm.
Jan. 23, 1916...	—0 34	S.	—3.55	—0.727	.019	1.0	+0.006	Sm.
Sept. 17, 1916...	—0 30	P.	—1.17	+0.989	.038	.5	—0.007	Sm.
Sept. 20, 1916...	0 0	Ma.	1.14	.978	.031	1.0	0.000	Sm.
Jan. 2, 1917...	—0 23	M.	—0.10	—0.447	.024	.6	+0.008	Sm.
Jan. 6, 1917...	0 18	Ma.	0.06	.507	.023	.5	.009	Sm.
Jan. 28, 1917...	+0 2	M.	+0.16	.791	.039	.9	—0.007	Sm.
Sept. 19, 1917...	0 0	Ma.	+2.50	+0.983	.024	.5	+0.014	Sm.
Oct. 2, 1917...	—0 30	P.	2.63	.910	.044	1.0	—0.006	Sm.
Oct. 2, 1917...	0 0	P.	2.63	.910	.045	.5	.007	Sm.
Oct. 6, 1917...	+0 7	M.	2.67	.878	.026	.5	+0.012	Sm.
Jan. 21, 1918...	+0 5	M.	+3.74	—0.709	.042	.5	—0.004	Sm.
Feb. 8, 1918...	—0 41	P.	3.92	.890	.037	.5	+0.002	Sm.
Feb. 11, 1918...	—0 34	P.	3.95	.912	.042	1.0	—0.003	Sm.

Normal Equations:

$$\begin{aligned} +11.1000\,c - 1.8500\,\mu + 1.0654\,\pi &= +0.3579. \\ +120.8478 - 3.3294 &= +0.1520. \\ +8.1602 &= +0.0363. \end{aligned}$$

Solution:

$$c = +0''.032.$$
$$\mu = +0''.008 \pm 0''.002.$$
$$\pi = +0''.004 \pm 0''.007.$$

p. e. unit weight, $\pm 0''.020$.

COMPARISON STARS.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
2	+135.6	—159.2	+0.288	0.58	+52°.869
3	— 59.2	193.2	.140	0.60	+52°.862
10	+156.4	+ 79.2	.397	0.42	
15	—244.0	223.2	.175	0.59	+53°.789
π	+ 50.0	— 2.7		0.73	+53°.796

TABLE AND SOLUTIONS FOR $\Delta 4'$.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Feb. 21, 1915...	+0 8	M.	—6.91	—0.964	+0.034	1.0	+0.010	Sm.
Sept. 27, 1915...	—0 36	S.	—4.73	+0.947	.044	.8	—0.004	Sm.
Oct. 9, 1915...	0 40	M.	4.61	.856.	.044	.8	.004	Sm.
Jan. 23, 1916...	—0 34	S.	—3.55	—0.727	.045	.6	—0.004	Sm.
Sept. 17, 1916...	—0 30	P.	—1.17	+0.989	.039	1.0	—0.001	Sm.
Sept. 20, 1916...	0 0	Ma.	1.14	.978	.036	.9	+0.002	Sm.
Jan. 2, 1917...	—0 23	M.	—0.10	—0.447	.046	1.0	—0.008	Sm.
Jan. 6, 1917...	0 18	Ma.	0.06	.507	.027	.5	+0.011	Sm.
Jan. 28, 1917...	+0 2	M.	+0.16	.791	.054	.6	—0.016	Sm.
Sept. 19, 1917...	0 0	Ma.	+2.50	+0.983	.023	.5	—0.012	Sm.
Oct. 2, 1917...	—0 30	P.	2.63	.910	.036	1.0	.001	Sm.
Oct. 2, 1917...	0 0	P.	2.63	.910	.041	.5	.006	Sm.
Oct. 6, 1917...	+0 7	M.	2.67	.878	.031	1.0	+0.004	Sm.
Jan. 21, 1918...	+0 5	M.	+3.74	—0.709	.022	1.0	+0.013	Sm.
Feb. 8, 1918...	—0 41	P.	3.92	.890	.050	.7	—0.015	Sm.
Feb. 11, 1918...	0 34	P.	3.95	.912	.031	.5	+0.004	Sm.

Normal Equations:

$$+12.4000\,c - 2.4180\,\mu + 1.6828\,\pi = +0.4662.$$
$$+145.9499 - 0.4393 = -0.2015.$$
$$+9.0619 = +0.0573.$$

Solution:

$$c = +0''.038.$$
$$\mu = -0''.004 \pm 0''.002.$$
$$\pi = -0''.003 \pm 0''.009.$$

p. e. unit weight, $\pm 0''.026$.

COMPARISON STARS.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
2	+135.6	—59.2	+0.288	0.58	+52°.869
3	— 59.2	193.2	.142	0.60	+52°.862
10	+156.4	+ 79.2	.393	0.42	
15	—244.0	223.2	.177	0.59	+53°.789
$\Delta 4'$	+ 48.8	— 2.9		0.52	

No. 16. B.D. + 45°.992. Groombridge 884. ($4^h\,44^m.4$; + 45° 41′.)
Mag. 6.5. $\mu = +0^s.0358$; − 0″.562.

The measures were in longitude. Other parallaxes published are:

Russell, (Photographic), + 0″.078 ± 0″.019.
Elkins-Chase, (Heliometer), + 0″.12 ± 0″.025.
Adams, (Spectroscopic), 0″.07.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Oct. 11, 1915...	−0 26	M.	−5.01	+0.845	−0.030	.8	+0.005	Be.
Oct. 24, 1915...	0 30	P.	4.88	.703	.030	1.0	.005	Be.
Oct. 28, 1916...	−0 36	M.	−1.18	+0.642	+0.030	.8	+0.005	Be.
Oct. 28, 1916...	+0 7	M.	1.18	.642	.045	1.0	−0.010	Be.
Nov. 7, 1916...	−0 8	P.	1.08	.498	.044	1.0	.009	Sm.
Jan. 2, 1917...	+0 7	M.	−0.52	−0.433	+ .039	1.0	−0.010	Be.
Jan. 16, 1917..:	−0 24	M.	0.38	.637	.028	1.0	+0.001	Be.
Feb. 12, 1917...	+0 11	M.	0.11	.914	.018	.8	.011	Sm.
Oct. 13, 1917...	−0 19	M.	+2.32	+0.821	+ .094	.5	+0.002	Sm.
Oct. 30, 1917...	0 11	P.	2.49	.618	.096	.9	−0.001	Sm.
Oct. 31, 1917...	+0 2	Ma.	2.50	.604	.084	.8	+0.011	Sm.
Feb. 11, 1918...	−0 10	P.	+3.53	−0.906	+ .099	.5	−0.010	Sm.
Feb. 13, 1918...	0 12	P.	3.55	.919	.085	.9	+0.005	Sm.

Normal Equations:

$$+11.0000\,c - 2.7190\,\mu + 1.4012\,\pi = +0.4670.$$
$$+78.8357 \quad -9.1612 \quad = +1.0437.$$
$$+5.4600 \quad = -0.0056.$$

Solution:

$c = +0''.045.$
$\mu = +0''.078 \pm 0''.003.$
$\pi = +0''.072 \pm 0''.012.$

p. e. unit weight, ± 0″.025.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
2	+181.8	− 95.2	+0.202	0.54	
3	148.0	+ 19.6	.215	0.60	
5	−104.4	235.2	.295	0.51	+45°.990
10	129.6	−189.2	.288	0.46	
π	0	0		0.76	+45°.992

No. 17. B.D. — 5°.1123. Weisse $4^h.1189$. (4^h $55^m.9$; — 5°, 52′.)
Mag. 6.5. $\mu = +0^s.040$; — 1″.10. Spectrum K.

The measures are in longitude. Other published parallaxes are:

Flint, (Transits), + 0″.29 ± 0″.042.
Smith, (Heliometer), + 0″.104 ± 0″.015.
Adams, (Spectroscopic), + 0″.12.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Jan. 30, 1913...	+0 37	M.	—3.09	—0.841	—0.092	.6	—0.003	M.
Feb. 5, 1913...	—0 18	B.	3.03	.891	.109	.6	+0.015	M.
Oct. 13, 1913...	+0 10	M.	—0.53	+0.781	+0.010	.8	+0.007	M.
Oct. 22, 1913...	0 50	S.	0.44	.674	.035	.8	—0.017	M.
Oct. 28, 1913...	0 30	P.	0.38	.593	.020	.9	.002	M.
Nov. 2, 1913...	0 20	P.	0.33	.521	.015	.9	+0.003	M.
Jan. 1, 1914...	—0 18	P.	+0.27	—0.475	+0.018	.5	—0.004	M.
Jan. 5, 1914...	0 3	P.	0.31	.535	.018	.9	.004	M.
Feb. 2, 1914...	+0 2	S.	0.59	.865	.011	.9	+0.004	M.
Feb. 21, 1914...	—0 2	M.	0.78	.976	.027	.5	—0.009	M.
Sept. 21. 1914...	—0 2	P.	+2.90	+0.962	+0.120	.9	+0.005	M.
Sept. 22, 1914...	+0 12	P.	2.91	.957	.122	1.0	.003	M.

Normal Equations:

$$+9.3000\,c + 1.7680\,\mu + 0.9647\,\pi = +0.2255.$$
$$+28.6225 + 6.4955 = +1.0329.$$
$$+5.5817 = +0.3335.$$

Solution:

$c = +0''.016.$
$\mu = +0''.141 \pm 0''.005.$
$\pi = +0''.103 \pm 0''.012.$

p. e. unit weight, ± 0″.024.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
2	+168.9	+128.9	+0.174	0.59	—5°.1126
3	144.4	6.4	.222	0.59	—5°.1124
6	—243.4	+ 17.2	.166	0.57	
7	+162.3	58.6	.252	0.44	
8	—232.2	59.6	.186	0.49	—6°.1045
π	+ 18.8	+ 4.9		0.46	—5°.1123

No. 18. B.D. + 8°.866. 0Σ 98 = 14 Orionis. ($5^h\,2^m.5$; + 8° 22′.)
Mag. 6.0-6.8. $\mu = +0^s.0017$; — 0″.061. Spectrum F.

The measures are in longitude. This is a binary of very long period. The components are separated about 0″.9. Their combined images formed a very slightly elongated image. The attempt was to bisect this image.

No other parallaxes of this star have been published.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Feb. 19, 1915...	+0 10	P.	—4.56	—0.954	—0.206	.7	—0.007	Be.
Feb. 21, 1915...	0 36	M.	4.54	.962	.225	.9	+ .012	Be.
Oct. 11, 1915...	+0 50	M.	—2.22	+0.841	.190	.9	—0.014	Be.
Nov. 6, 1915...	—0 17	P.	1.96	.517	.209	.5	+0.005	Be.
Nov. 9, 1915...	+0 34	P.	1.93	.472	.205	.8	.001	Be.
Oct. 7, 1916...	+0 32	M.	+1.40	+0.870	.200	.5	+0.001	Be.
Oct. 14, 1916...	0 27	M.	1.47	.804	.212	.8	.013	Be.
Oct. 24, 1916...	—0 30	P.	1.57	.687	.020	1.0	.002	Be.
Jan. 28, 1917...	+0 17	M.	+2.53	—0.787	.190	1.0	—0.014	Be.
Feb. 12, 1917...	0 46	M.	2.68	.917	.211	.5	+0.007	Be.
Feb. 18, 1917...	0 29	M.	2.74	.951	.215	.8	.011	Be.
Feb. 21, 1917...	0 7	P.	2.77	.965	.198	1.0	—0.005	Be.

Normal Equations:

$$+9.4000\,c + 0.4780\,\mu - 1.3467\,\pi = -1.9233.$$
$$+71.2869 - 1.2843 = -0.0118.$$
$$+6.4805 = +0.2959.$$

Solution:

$$c = -0''.204.$$
$$\mu = +0''.006 \pm 0''.004.$$
$$\pi = +0''.016 \pm 0''.012.$$

p. e. unit weight, ± 0″.031.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
2	189.6	152.0	0.182	0.76	+8°.861
9	+148.0	106.4	.211	0.71	+8°.871
11	200.0	— 59.2	.295	0.54	
13	—187.2	—104.4	.312	0.38	
π	0.0	0.0		0.60	+8°.866

No. 19. B.D. + 39°.1248. λ Aurigae = Σ 3, App. II. ($5^h\ 12^m.1$; **+ 40° 1′.) Mag. 4.85. $\mu = +0^s.0461; -0''.656$. Spectrum G.**

This is a quadruple star, but it is probable that it is not a physical system. The component A has a large proper motion, and this is the only component that we measured. The measures are in longitude. Other published parallaxes are:

Flint,	$+0''.070 \pm 0''.028$.
Chase,	$+0''.11 \pm 0''.041$.
Kostinsky,	$+0''.10 \pm 0''.021$.
Millosevich,	$+0''.111 \pm 0''.015$.
Adams,	$+0''.100$.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Oct. 7, 1912...	0 0	M.	−5.54	+0.907	−0.003	.7	0.000	Sm.
Oct. 20, 1912...	−0 27	B.	5.41	.788	+0.002	.8	−0.003	Sm.
Feb. 4, 1914...	0 34	P.	−0.69	−0.812	+0.092	.8	+0.012	Sm.
Feb. 9, 1914...	0 24	S.	0.64	.859	.102	1.0	.002	Sm.
Feb. 21, 1914...	+0 4	M.	0.52	.944	.111	.9	−0.005	Sm.
Mar. 3, 1914...	0 15	M.	0.42	.984	.116	.5	.007	Sm.
Sept. 28, 1914...	−0 50	P.	+1.67	+0.965	+0.189	.7	+0.005	Sm.
Sept. 30, 1914...	0 20	M.	1.69	.955	.202	.5	−0.007	Sm.
Oct. 19, 1914...	+0 4	P.	1.88	.804	.192	.7	+0.006	Sm.
Oct. 28, 1914...	−0 9	M.	1.97	.701	.202	.9	−0.003	Sm.
Feb. 8, 1915...	−0 28	P.	+3.00	−0.848	+0.205	.9	−0.001	Sm.
Feb. 10, 1915...	+0 5	P.	3.02	.866	.206	1.0	.002	Sm.

Normal Equations:

$$+9.4000\,c + 0.7470\,\mu - 0.8674\,\pi = +1.2730.$$
$$+72.5882 - 5.9503 = +1.9887.$$
$$+7.0239 = -0.1746.$$

Solution:

$$c = +0''.135.$$
$$\mu = +0''.128 \pm 0''.002.$$
$$\pi = +0''.070 \pm 0''.007.$$

p. e. unit weight, $\pm 0''.017$.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
1	+146.6	— 38.3	+0.199	0.44	+40°.1252
5	—248.9	22.2	.184	0.56	+39°.1237
6	+ 0.6	+ 73.6	.215	0.52	+39°.1249
7	31.5	169.1	.235	0.46	
10	70.3	—182.3	.167	0.62	+40°.1248
π	2.8	+ 13.2		0.66	+39°.1248

No. 20. B.D. — 3°.1123. Weisse I $5^h.592$. ($5^h\ 26^m.4$; — 3° 42′.)
Mag. 8.7. $\mu = +\ 0^s.0496$; — 2″.094. Spectrum Ma.

The measures were in longitude. Other published parallaxes are:

Schlesinger, + 0″.189 ± 0″.010.
Flint, + 0″.06 ± 0″.036.
Kinberg, + 0″.139 ± 0″.065.
Adams, 0″.158.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Nov. 1, 1913...	+0 18	M.	—6.13	+0.661	—0.500	.5	+0.017	M.
Nov. 5, 1913...	0 1	S.	6.09	.607	.483	.8	.000	M.
Feb. 2, 1914...	+0 20	S.	—5.20	—0.777	—0.481	1.0	—0.005	M.
Mar. 12, 1914...	1 14	M.	4.82	.994	.492	0.9	+0.016	M.
Mar. 13, 1914...	—0 22	M.	4.81	.994	.470	.7	—0.005	M.
Nov. 4, 1914...	—0 41	M.	—2.45	+0.624	—0.311	1.0	—0.007	M.
Nov. 13, 1914...	+0 45	M.	2.36	.495	.302	.9	.016	M.
Oct. 21, 1916...	+0 9	M.	+4.72	+0.789	—0.005	.9	+0.018	M.
Oct. 28, 1916...	0 20	M.	4.79	.709	+0.018	.8	—0.005	M.
Nov. 3, 1916...	—0 11	Ma.	4.85	.630	.013	.8	+0.001	M.
Jan. 28, 1917...	+0 48	M.	—5.71	—0.723	—0.027	.8	—0.017	M.
Feb. 11, 1917...	0 55	M.	5.85	.867	.011	.6	+0.001	M.
Feb. 22, 1917...	0 22	M.	5.96	.943	.009	1.0	.006	M.

Normal Equations:

$$+ 10.700\,c + 0.582\,\mu - 0.741\,\pi = -\ 2.415.$$
$$+ 262.981 + 0.683 = +\ 11.821.$$
$$+ 6.347 = +\ 0.396.$$

Solution:

$$c = -0''.226.$$
$$\mu = +0''.213 \pm 0''.002.$$
$$\pi = +0''.146 \pm 0''.014.$$

p. e. unit weight, $\pm 0''.036$.

Comparison Stars.

No.	*X.*	*Y.*	Dependence.	Diameter.	B. D. No.
1	—126.3	+ 5.8	+0.614	0.50	—3°.1118
2	+148.8	7.7	.822	0.55	—3°.1127
9	— 22.6	—13.5	—0.436	0.45	—3°.1119
π	+ 54.7	+15.7		0.85	—3°.1123

No. 21. B.D. — 13°.2267. β 101 = 9 Argus. ($7^h\,47^m.1$; — 13° 38′.) Mag. 5.6–6.7. $\mu = -0^s.0041$; — ″.339. Spectrum F_8.

The measures are in right ascension. This is a binary with a period of about 23 years. The components are separated about 0″.25. The combined image seemed round and was bisected in the measuring. Other parallaxes published are by:

Flint, + 0″.028 ± 0″.026, (Transits).
Russell, + 0″.068, (Hypothetical).

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, *T.*	Parallax Factor, *P.*	Solution, *m.*	Wt., *p.*	Res., *v.*	Measured by.
Mar. 14, 1915...	+0 52	M.	—4.06	—0.83	—0.298	1.0	+0.004	M.
Mar. 27, 1915...	—0 3	Ma.	3.93	.94	.296	1.0	—0.001	M.
Nov. 24, 1915...	+1 37	M.	—1.51	+0.78	—0.254	.5	+0.004	M.
Nov. 27, 1915...	—0 8	M.	1.48	.73	.250	.6	—0.001	M.
Nov. 29, 1915...	0 0	S.	1.46	.72	.247	1.0	.005	M.
Nov. 30, 1915...	—0 18	P.	1.45	.71	.246	1.0	.006	M.
Mar. 23, 1916...	—0 6	M.	—0.31	—0.91	—0.293	.5	+0.001	M.
Apr. 10, 1916...	+0 54	P.	0.13	.99	.297	1.0	.003	M.
Nov. 19, 1916...	—0 11	P.	+2.10	+0.81	—0.256	.5	+0.011	M.
Nov. 27, 1916...	0 0	M.	2.18	.73	.250	1.0	.003	M.
Mar. 24, 1917...	+0 8	Ma.	+3.35	—0.92	—0.307	.7	+0.019	M.
Mar. 25, 1917...	0 10	M.	3.36	.93	.280	.8	—0.008	M.
Mar. 28, 1917...	—0 10	P.	3.39	.94	.277	1.0	.012	M.

Normal Equations:

$$+10.6000\,c - 1.1750\,\mu - 2.1500\,\pi = -2.9014.$$
$$+74.0188 \quad -1.3860 \quad = +0.3629.$$
$$+7.6420 \quad = +0.7721.$$

Solution:

$$c = -0''.268.$$
$$\mu = +0''.005 \pm 0''.003.$$
$$\pi = +0''.121 \pm 0''.009.$$

p. e. unit weight, $\pm 0''.025$.

COMPARISON STARS.

No.	*X.*	*Y.*	Dependence.	Diameter.	B. D. No.
6	+273.6	+ 82.8	+0.223	0.45	
7	— 67.2	226.0	.258	0.35	—13°.2262
8	23.2	— 77.2	.253	0.47	
10	168.8	215.6	.266	0.36	—13°.2258
π	0.0	0.0		0.73	—13°.2267

No. 22. B.D. + 27°.1589. χ Cancri. ($8^h\ 14^m$; + 27° 33′.) Mag. 5.16. $\mu = -0^s.0009$; — 0″.388. Spectrum F.

The measures are in right ascension. The star has a large proper motion. No other parallaxes have been published.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, *T.*	Parallax Factor, *P.*	Solution, *m.*	Wt., *p.*	Res., *v.*	Measured by.
Oct. 28, 1916...	—0 11	M.	—2.85	+0.96	+0.025	.5	—0.008	Sm.
Nov. 19, 1916...	0 1	P.	2.63	.86	.016	1.0	.000	Sm.
Nov. 21, 1916...	0 43	P.	2.61	.85	.016	.5	.000	Sm.
Mar. 30, 1917...	—0 32	M.	—1.32	—0.90	—0.020	.6	+0.013	Sm.
Apr. 3, 1917...	+0 18	M.	1.28	.93	.006	.5	—0.001	Sm.
Apr. 11, 1917...	0 23	P.	1.20	.97	.004	1.0	.004	Sm.
Nov. 3, 1917...	—0 18	M.	+0.86	+0.95	+0.012	.5	+0.005	Sm.
Nov. 4, 1917...	0 38	P.	.87	.94	.016	.9	.001	Sm.
Dec. 10, 1917...	0 32	P.	1.23	.65	.012	.6	.001	Sm.
Mar. 7, 1918...	+0 38	M.	+2.10	—0.69	—0.009	.5	+0.005	Sm.
Mar. 16, 1918...	0 28	Ma.	2.19	.79	0.000	.5	—0.006	Sm.
Mar. 29, 1918...	—0 48	P.	2.32	.89	—0.012	.5	+0.005	Sm.
Apr. 1, 1918...	0 16	M.	2.35	.91	.002	1.0	—0.005	Sm.

Normal Equations:

$$+8.6000\,c - 0.3860\,\mu - 0.5940\,\pi = +0.0326.$$
$$+32.4643 - 5.4033 = -0.0756.$$
$$+6.6952 = +0.0842.$$

Solution:

$$c = +0''.005.$$
$$\mu = -0''.001 \pm 0''.003.$$
$$\pi = +0''.060 \pm 0''.006.$$

p. e. unit weight, $\pm 0''.015$.

Comparison Stars.

No.	*X.*	*Y.*	Dependence.	Diameter.	B. D. No.
3	—212.8	+ 3.2	+0.046	0.64	
4	216.4	107.2	.247	1.03	+27°.1582
7	+ 69.2	— 22.4	.313	0.79	+27°.1591
8	96.4	24.8	.339	0.61	
11	162.4	207.2	.055	0.68	+27°.1593
π	0.0	0.0		0.83	+27°.1589

No. 23. B.D. + 42°.1922. Σ 1263 = Lalande 17161. ($8^h\ 38^m.6$; + 42° 3′.) Mag. 8.5. $\mu = -0^s.0241$; $-0''.649$.

The measures are in right ascension. Other parallaxes published for this star are:

Chase, $-0''.08 \pm 0''.048$, (Heliometer).
Adams, $0''.058$, (Spectroscopic).

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, *T.*	Parallax Factor, *P.*	Solution, *m.*	Wt., *p.*	Res., *v.*	Measured by.
Mar. 23, 1916...	+0 7	M.	—4.54	—0.80	+0.086	.6	—0.014	Sm.
Nov. 27, 1916...	—0 3	M.	—2.05	+0.84	+0.070	1.0	+0.007	Sm.
Dec. 2, 1916...	0 24	M.	2.00	.80	.091	0.6	—0.015	Sm.
Dec. 9, 1916...	0 35	M.	1.93	.72	.064	.8	+0.009	Sm.
Mar. 25, 1917...	+0 7	M.	—0.87	—0.81	+0.024	.5	+0.002	Sm.
Mar. 28, 1917...	—0 15	P.	.84	.83	.019	.9	.006	Sm.
Mar. 30, 1917...	0 13	M.	.82	.85	.019	1.0	.005	Sm.
Nov. 17, 1917...	—0 54	M.	+1.50	+0.90	+0.022	0.6	+0.012	Sm.
Nov. 17, 1917...	0 20	M.	1.50	.90	.040	.6	—0.006	Sm.
Dec. 10, 1917...	0 5	P.	1.73	.71	.037	1.0	.010	Sm.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Mar. 22, 1918...	—0 11	P.	+2.75	—0.78	—0.022	1.0	+0.004	Sm.
Mar. 28, 1918...	0 44	M.	2.81	.84	.006	0.6	—0.014	Sm.
Mar. 29, 1918...	0 33	P.	2.82	.84	.024	.6	+0.004	Sm.

Normal Equations:

$$+9.8000\,c + 0.1290\,\mu - 0.5840\,\pi = +0.3097.$$
$$+46.3998 - 2.0719 = -0.6176.$$
$$+6.4901 = +0.1500.$$

Solution:

$$c = +0''.033.$$
$$\mu = -0''.058 \pm 0''.004.$$
$$\pi = +0''.104 \pm 0''.011.$$

p. e. unit weight, $\pm 0''.028$.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
4	+ 80.9	— 97.7	+0.232	0.37	
5	—101.9	112.7	.127	0.52	
9	233.8	+103.7	.262	0.46	
13	+145.3	25.9	.379	0.40	
π	0.0	0.0		0.75	+42°.1922

No. 24. B.D. + 42°.2214. OΣ 234. ($11^h\ 26^m.2 + 41°\ 52'.$)
Mag. 7.0–7.5.

The measures are in right ascension. The combined image of the two components, which are separated about 0″.4, appears round. This is a binary with a period of 77 years, (See). Russell finds for this star a hypothetical parallax of 0″.014.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
May 10, 1915...	—0 18	P.	—5.50	—0.79	+0.024	.9	0.000	Sm.
Jan. 8, 1916...	+0 5	M.	—3.07	+0.80	.054	.8	+0.007	Sm. Be.
Apr. 30, 1916...	—0 7	M.	—1.94	—0.71	.073	1.0	—0.013	Sm.
May 11, 1916...	+0 2	M.	1.83	.81	.070	1.0	.010	Be.
May 12, 1916...	—0 17	P.	1.82	.81	.050	.9	+0.010	Sm. Be.
May 13, 1916...	+0 6	Ma.	1.81	.82	.059	.5	.001	Sm.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Dec. 9, 1916...	—0 13	M.	+0.29	+0.90	.096	.6	—0.001	Be.
Dec. 23, 1916...	0 4	M.	0.43	.89	.092	.5	+0.004	Be.
Dec. 30, 1916...	0 28	M.	0.50	.86	.102	.5	—0.006	Sm.
Jan. 19, 1917...	0 18	Ma.	0.70	.70	.092	1.0	+0.005	Sm.
Apr. 16, 1917...	—0 35	P.	+1.57	—0.54	.099	.7	—0.003	Be.
May 11, 1917...	0 13	P.	1.82	.80	.083	.7	+0.013	Sm.
May 14, 1917...	0 0	P.	1.85	.83	.090	.7	.006	Be.
Jan. 5, 1918...	+0 9	M.	+4.21	+0.82	.146	.7	—0.014	Sm.
Feb. 11, 1918...	—0 5	P.	4.58	.43	.130	.7	+0.003	Sm.

Normal Equations:

$$+11.2000\,c - 2.5590\,\mu - 1.2590\,\pi = +0.9125.$$
$$+80.7848 \quad +9.0348 \quad = +0.6481.$$
$$+6.6369 \quad = +0.0361.$$

Solution:

$$c = +0''.085.$$
$$\mu = +0''.046 \pm 0''.003.$$
$$\pi = +0''.038 \pm 0''.011.$$

p. e. unit weight, $\pm 0''.025$.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
2	—120.8	+192.9	+0.222	0.40	
4	10.1	—204.5	.368	0.36	+41°.2199
7	+ 70.6	+255.9	.146	0.46	
8	76.3	— 18.6	.264	0.36	
π	0.0	0.0		0.62	+42°.2214

No. 25. B.D. + 28°.2106. Bradley 1646 = 9 Comae Berenices. ($12^h\ 14^m.5$; + 28° 43′.) Mag. 6.30. $\mu = -0^s.0151$; $-0''.142$. Spectrum F.

The measures are in right ascension. No other parallaxes have been published.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Jan. 8, 1916...	+0 22	M.	—2.38	+0.87	—0.060	.7	—0.016	Sm.
Jan. 14, 1916...	0 16	Ma.	2.32	.86	.085	.5	+0.008	Be.
Feb. 7, 1916...	—1 16	S.	2.08	.66	.079	1.0	—0.002	Be.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
May 11, 1916...	—0 4	M.	—1.14	—0.68	.113	.6	+0.010	Be.
May 12, 1916...	+0 15	P.	1.13	.70	.110	.5	.007	Be.
May 13, 1916...	0 16	Ma.	1.12	.70	.094	1.0	—0.009	Be.
May 26, 1916...	0 14	P.	0.99	.82	.113	1.0	.008	Be.
Dec. 23, 1916...	—0 1	M.	+1.12	+0.90	.117	.5	+0.010	Be.
Jan. 26, 1917...	0 27	Ma.	1.46	.75	.114	.9	.003	Sm.
Feb. 12, 1917...	+0 14	M.	1.63	.59	.105	.5	—0.009	Be.
Feb. 12, 1917...	0 54	M.	1.63	.59	.118	.9	+0.004	Be.
May 17, 1917...	+0 20	M.	+2.57	—0.73	.130	.5	—0.006	Be.
May 30, 1917...	0 49	P.	2.70	.84	.132	1.0	.006	Be.

Normal Equations:

$$+9.6000\,c - 0.1240\,\mu + 0.1670\,\pi = -1.0101.$$
$$+31.4931 - 1.7336 = -0.2780.$$
$$+5.3907 = +0.0529.$$

Solution:

$$c = -0''.106.$$
$$\mu = -0''.041 \pm 0''.004.$$
$$\pi = +0''.048 \pm 0''.011.$$

p. e. unit weight, $\pm 0''.025$.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
2	— 28.8	—178.8	+0.238	0.69	+28°.2105
3	81.2	82.8	.332	0.90	+28°.2103
4	+ 42.4	+202.0	.327	0.53	
6	195.2	38.0	.103	0.43	
π	0.0	0.0		0.66	+28°.2106

No. 26. B.D. + 26°.2345. Σ 1639 = 68 Comae Berenices. ($12^h\ 19^m.4$; + 26° 8′.) Mag. 6.7–7.9. Spectrum A_5.

The measures are in right ascension. This is a binary of long and uncertain period. The combined image of the components was sensibly round. Russell finds a hypothetical parallax of 0″.013 for this star.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
May 6, 1915...	—0 10	M.	—5.95	—0.60	+0.040	.6	+0.015	Be.
May 23, 1915...	+0 27	M.	5.78	.78	.044	.7	.012	Be.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Feb. 3, 1916...	—0 27	P.	—3.22	+0.70	.048	1.0	—0.007	Be.
May 11, 1916...	+1 0	M.	—2.24	—0.67	.057	.9	—0.013	Be.
June 1, 1916...	0 45	M.	2.03	.85	.043	.9	+0.002	Be.
Jan. 19, 1917...	—0 29	Ma.	+0.29	+0.82	.032	.5	—0.004	Be.
Jan. 19, 1917...	+0 7	Ma.	0.29	.82	.034	1.0	.006	Be.
Feb. 24, 1917...	—0 34	M.	0.65	.44	.036	.5	.007	Be.
Feb. 24, 1917...	+0 6	M.	0.65	.44	.023	1.0	+0.006	Be.
May 10, 1917...	+0 57	M.	+1.40	—0.66	.042	1.0	—0.009	Be.
Jan. 5, 1918...	+0 1	M.	+3.80	+0.89	.008	.5	+0.008	Sm.
Jan. 5, 1918...	0 41	M.	3.80	.89	.010	.8	.006	Sm.
Feb. 13, 1918...	—0 5	Ma.	4.19	.59	.008	.5	.009	Sm.
Feb. 15, 1918...	0 15	Ma.	4.21	.56	.014	1.0	.003	Sm.

Normal Equations:

$$10.9000\,c - 0.6240\,\mu + 1.6680\,\pi = +0.3558.$$
$$+111.2145 + 13.7995 = -0.4476.$$
$$+5.4381 = -0.0199.$$

Solution:

$$c = +0''.033.$$
$$\mu = -0''.014 \pm 0''.003.$$
$$\pi = -0''.028 \pm 0''.014.$$

p. e. unit weight, $\pm 0''.026$.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
1	— 64.4	+206.0	+0.380	1.31	+26°.2343
2	+ 94.0	65.0	.173	0.58	+26°.2346
3	101.6	— 17.6	.156	0.87	+26°.2347
4	— 26.4	298.0	.291	0.63	+25°.2503
π	0.0	0.0		0.86	+26°.2345

No. 27. B.D. + 10°.2468. 33 Virginis = Br 1706. ($12^h\ 41^m.3$; + 10° 6′.) Mag. 5.86. $\mu = +0^s.0184$; $-0''.456$. Spectrum K.

The measures are in longitude. Other published parallaxes are by:

Chase, $-0''.10 \pm 0''.016$.
Adams, $0''.030$.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
May 19, 1912...	+0 34	B.	—4.41	—0.810	+0.152	.8	—0.004	S.
May 27, 1912...	1 6	B.	4.33	.885	.157	.9	.012	S.
Feb. 4, 1913...	—0 12	B.	—1.80	+0.751	+0.064	1.0	—0.009	S.
Feb. 6, 1913...	0 6	B.	1.78	.729	.061	.7	.007	S.
Feb. 7, 1913...	+0 49	M.	1.77	.716	.059	.5	.005	S.
Feb. 14, 1913...	0 34	M.	1.70	.629	.043	.8	+0.010	S.
Feb. 25, 1913...	0 7	B.	1.59	.472	.045	.9	.004	S.
May 3, 1913...	—0 21	M.	—0.92	—0.613	+0.039	.7	—0.008	S.
May 8, 1913...		M.	0.87	.679	.008	.9	+0.022	S.
May 14, 1913...	—0 36	B.	0.81	.751	.014	.9	.014	S.
June 2, 1913...	+0 16	B.	0.62	.929	.003	.4	.020	S.
Jan. 5, 1914...	+0 35	M.	+1.55	+0.969	—0.052	.9	—0.006	S.
Feb. 1, 1914...	0 27	P.	1.82	.786	.070	.9	+0.004	S.
Feb. 7, 1914...	—0 14	S.	1.88	.720	.069	1.0	.001	S.
Feb. 17, 1914...	0 3	M.	1.98	.592	.070	.9	0.000	S.
Feb. 24, 1914...	+0 7	P.	2.05	.491	.078	.9	+0.006	S.
May 2, 1914...	+0 6	M.	+2.72	—0.596	—0.099	1.0	+0.008	S.
May 14, 1914...	0 54	M.	2.84	.749	.097	.9	.003	S.
May 15, 1914...	0 19	P.	2.85	.760	.094	.9	0.000	S.
May 25, 1914...	0 24	S.	2.95	.862	.064	.9	—0.033	S.

Normal Equations:

$$+16.800\,c + 2.485\,\mu - 0.442\,\pi = -0.118.$$
$$+91.850 + 1.769 = -3.074.$$
$$+8.971 = -0.093.$$

Solution:

$$c = -0''.002.$$
$$\mu = -0''.156 \pm 0''.004.$$
$$\pi = -0''.018 \pm 0''.012.$$

p. e. unit weight, $\pm\, 0''.037$.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
1	+61.7	— 98.0	+0.949	0.70	+10°.2467
2	—58.2	12.8	—0.199	0.62	+10°.2471
3	3.5	+110.8	+0.250	0.42	+10°.2472
π	+69.3	— 62.7		0.38	+10°.2468

No. 28. B.D. + 17°.2611. β 800. ($13^h\ 11^m.9$; + 17° 33′.)
Mag. 7.0–10. $\mu = +0^s.0445$; — 0″.269.

The measures were in longitude. This is a binary star whose large proper motion and large orbital motion indicates that it is comparatively near to us. The measures were made on the principal component. Adams found a parallax of this star spectroscopically to be 0″.087.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
June 4, 1915...	+0 3	P.	—4.28	—0.75	+0.025	.7	—0.001	Be.
June 5, 1915...	0 9	Ma.	4.27	.77	.023	.8	+0.001	Be.
Feb. 3, 1916...	—0 31	P.	—1.84	+0.83	.134	1.0	+0.001	Be.
Apr. 30, 1916...	+0 10	S.	—0.97	—0.35	.142	.5	+0.007	Be.
May 26, 1916...	0 27	P.	0.71	.68	.167	.5	—0.014	Be.
June 1, 1916...	0 48	M.	0.65	.73	.147	.7	+0.008	Be.
Jan. 26, 1917...	—0 38	Ma.	+1.74	+0.87	.255	.5	+0.010	Be.
Jan. 26, 1917...	0 0	Ma.	1.74	.87	.264	.9	.001	Be.
Feb. 12, 1917...	+0 55	M.	1.91	.75	.269	.9	0.000	Be.
Mar. 12, 1917...	0 28	M.	2.19	.41	.283	.6	—0.009	Be.
Mar. 12, 1917...	1 13	M.	2.19	.41	.280	.5	.006	Be.
May 30, 1917...	0 35	P.	+2.98	—0.72	.282	.8	+0.003	Be.

Normal Equations:

$$+8.4000\,c - 0.5990\,\mu + 0.4310\,\pi = +1.5699.$$
$$+51.7150 + 6.7732 = +1.8534.$$
$$+4.3880 = +0.3910.$$

Solution:

$$c = +0''.189.$$
$$\mu = +0''.169 \pm 0''.003.$$
$$\pi = +0''.070 \pm 0''.010.$$

p. e. unit weight, ± 0″.018.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
1	—215.2	— 37.2	+0.451	0.43	
2	82.4	+178.0	.162	0.68	+18°.2707
5	+212.0	218.8	.045	0.51	+18°.2711
7	294.2	— 62.4	.042	0.41	
π	0.0	0.0		0.60	+17°.2611

No. 29. B.D. + 35°.2462. OΣ 269. ($13^h\ 28^m.3 + 35°\ 25'.$)
Mag. 7.2–7.7.

This is a binary star. The combined image of the components, which is round, was bisected in the measurements. The measures are in right ascension. No other parallax of the star has been published.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Mar. 3, 1915...	+0 50	Ma.	—7.48	+0.61	—0.060	.5	+0.006	Be.
Mar. 12, 1915...	0 8	M.	7.39	.49	.054	.8	—0.002	Be.
Feb. 7, 1916...	+0 15	S.	—4.07	+0.83	.050	.8	—0.008	Be. Sm.
Mar. 23, 1916...	0 26	P.	3.62	.32	.062	.9	.004	Be. Sm.
June 12, 1916...	+0 20	P.	—2.81	—0.79	.088	1.0	+0.005	Be.
June 18, 1916...	0 55	S.	2.75	.84	.090	.5	.006	Be.
Mar. 3, 1918...	—0 36	P.	+3.48	+0.60	.086	.8	+0.012	Sm.
Mar. 3, 1918...	1 10	P.	3.48	.60	.070	.8	—0.004	Sm.
Mar. 15, 1918...	+0 55	Ma.	3.60	.44	.084	1.0	+0.007	Sm.
May 17, 1918...	+0 10	D.	+4.23	—0.50	.080	1.0	—0.012	Sm.
May 31, 1918...	0 0	D.	4.37	.68	.103	.5	+0.009	Sm.
June 7, 1918...	0 45	P.	4.44	.74	.096	.9	.001	Sm.
June 19, 1918...	1 13	D.	4.56	.85	.090	.6	—0.007	Sm.

Normal Equations:

$$+10.1000\,c + 1.9640\,\mu - 0.1770\,\pi = -0.7811.$$
$$+198.3845 - 9.5071 = -0.6450.$$
$$+4.1754 = +0.0908.$$

Solution:

$$c = -0''.077.$$
$$\mu = -0''.008 \pm 0''.002.$$
$$\pi = +0''.067 \pm 0''.012.$$

p. e. unit weight, $\pm\ 0''.023$.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
1	—211.9	—248.3	+0.169	0.50	
2	61.9	200.7	.217	0.44	
5	+ 8.6	+224.1	.301	0.41	
6	149.3	57.9	.313	0.59	
π	0.0	0.0		0.84	+35°.2462

No. 30. B.D. + 30°.2653. η Coronae Borealis = Σ 1937.
($15^h\ 19^m.1$; + 30° 39′.) Mag. 5.58–6.08. $\mu = +0^s.0101$;
$-0''.198$. Spectrum G.

This is a binary system with a period of 41.5 years. In making the measures the combined image of the components was bisected. It seemed perfectly round. The measures are in right ascension. Other parallaxes of this star published are:

Slocum, (Photographic), $+0''.073 \pm 0''.014$.
Russell, (Hypothetical), $+0''.060$.
Adams, (Spectroscopic), $+0''.069$.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, *T.*	Parallax Factor, *P.*	Solution, *m.*	Wt., *p.*	Res., *v.*	Measured by.
Mar. 23, 1916...	—0 10	P.	—4.42	+0.72	+0.011	.9	+0.002	Be.
June 12, 1916...	—0 1	P.	—3.61	—0.47	—0.004	.8	+0.004	Be.
June 26, 1916...	0 24	P.	3.47	.67	.003	1.0	.001	Be.
July 4, 1916...	0 20	S.	3.39	.76	+0.002	.8	—0.005	Sm.
Mar. 22, 1917...	—1 18	P.	—0.78	+0.73	+0.041	.5	+0.011	Be.
Mar. 24, 1917...	1 13	M.	0.76	.71	.050	1.0	.002	Be.
Mar. 24, 1917...	+0 5	M.	0.76	.71	.060	1.0	—0.008	Be.
July 7, 1917...	+0 3	Ma.	+0.29	—0.78	+0.037	.6	—0.001	Sm.
Mar. 1, 1918...	+0 23	Ma.	+2.66	+0.90	+0.098	.9	—0.007	Sm.
Mar. 3, 1918...	—0 2	P.	2.68	.89	.086	1.0	+0.005	Sm.
June 20, 1918...	+1 18	D.	+3.77	—0.58	+0.080	.6	—0.004	Sm.
June 27, 1918...	0 16	P.	3.84	.68	.066	.6	+0.009	Sm.
July 8, 1918...	0 25	D.	3.85	.79	.077	.5	—0.003	Sm.

Normal Equations:

$$+10.2000\,c - 3.1690\,\mu + 0.8600\,\pi = +0.4583.$$
$$+89.4797 + 1.4805 = +0.8298.$$
$$+5.5064 = +0.1559.$$

Solution:

$$c = +0''.047.$$
$$\mu = +0''.050 \pm 0''.002.$$
$$\pi = +0''.085 \pm 0''.008.$$

p. e. unit weight, $\pm 0''.018$.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
2	+133.8	+144.5	+0.341	0.60	+31°.2731
3	230.1	112.9	.150	0.68	+30°.2654
6	101.0	—125.6	.039	0.47	
12	—178.9	130.5	.470	0.40	
π	0.0	0.0		0.97	+30°.2653

No. 31. B.D. + 2°.3118. λ Ophiuchi = Σ 2055. ($16^h\ 25^m.9$; + 2° 12′.) Mag. 3.85. $\mu = -0^s.0032; -0''.084$.

Spectrum A.

The measures are in longitude. This is a binary of long period. The combined image of the two components is very slightly elongated. In the measures this combined image was bisected. Other published parallaxes are:

Lee-Joy-Van Biesbroeck, (Photographic), $+0''.018 \pm 0''.003$.
Schlesinger, (Photographic), $-0''.010 \pm 0''.008$.
Russell, (Hypothetical), $+0''.024$.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Apr. 14, 1915...	—0 32	Ma.	—3.16	+0.645	—0.028	1.0	+0.003	Be.
Apr. 15, 1915...	0 28	P.	3.15	.632	.021	.8	—0.003	Be.
July 8, 1915...	+0 56	Ma.	—2.31	—0.671	.026	1.0	—0.003	Be.
July 9, 1915...	—0 9	M.	2.30	.684	.023	1.0	0.000	Be.
July 14, 1915...	0 6	M.	2.25	.745	.022	.8	—0.001	Be.
July 16, 1915...	+0 13	M.	2.23	.767	.022	.9	.001	Be.
Mar. 23, 1916...	0 28	P.	+0.28	+0.871	.024	1.0	—0.002	Be.
June 29, 1916...	0 14	S.	+1.26	—0.561	.019	.6	—0.006	Be.
July 7, 1916...	—0 30	S.	1.34	.668	.028	1.0	+ .004	Be.
Apr. 13, 1917...	+0 14	Ma.	+4.14	+0.650	.024	1.0	—0.003	Be.
Apr. 16, 1917...	—0 8	M.	4.17	.611	.030	.9	+0.004	Be.
Apr. 16, 1917...	+0 19	M.	4.17	.611	.027	1.0	.001	Be.

Normal Equations:

$$+11.0000\,c + 0.3420\,\mu + 0.1866\,\pi = -0.2726.$$
$$+90.0804 \quad +8.8293 \quad = -0.0450.$$
$$+5.1526 \quad = -0.0116.$$

Solution:

$$c = -0''.025.$$
$$\mu = -0''.015 \pm 0''.001.$$
$$\pi = -0''.037 \pm 0''.005.$$

p. e. unit weight, $\pm 0''.010$.

COMPARISON STARS.

No.	*X.*	*Y.*	Dependence.	Diameter.	B. D. No.
1	+ 28.8	−164.8	+0.275	0.80	+2°.3119
2	−134.4	13.6	.245	0.81	+2°.3115
4	151.1	+212.4	.266	0.60	+2°.3124
5	+215.2	− 10.4	.214	0.75	+2°.3114
π	0.0	0.0		0.95	+2°.3118

No. 32. B.D. + 32°.2896. 72 W Herculis. ($17^h\ 16^m.9$; + 32° 36′.) Mag. 5.36. $\mu = +0^s.0099$; − 1″.053. Spectrum G.

This is B. G. C. 7976. The brighter component only was measured. Other published parallaxes of this star:

Flint, (Transits),	+ 0″.09 ± 0″.041.
Chase, (Heliometer),	+ 0″.14 ± 0″.036.
Schlesinger, (Photometric),	+ 0″.068 ± 0″.009.
Adams, (Spectroscopic),	+ 0″.120.

The measures are in longitude.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, *T.*	Parallax Factor, *P.*	Solution, *m.*	Wt., *p.*	Res., *v.*	Measured by.
July 25, 1915...	+0 30	M.	−7.90	−0.754	−0.126	.9	−0.001	Be.
Apr. 29, 1916...	+0 47	M.	−5.11	+0.568	−0.071	.9	0.000	Be.
May 1, 1916...	−0 12	S.	5.09	.541	.070	.7	−0.001	Be.
July 7, 1916...	−0 29	W.	−4.42	−0.530	−0.086	.6	+0.010	Be.
July 11, 1916...	+0 17	S.	4.38	.587	.084	.8	.007	Be.
Aug. 19, 1917...	+0 38	M.	−.034	−0.965	−0.021	1.0	−0.005	Sm.
Aug. 26, 1917...	−0 25	M.	0.27	.992	.028	.5	+0.002	Sm.
Aug. 27, 1917...	+0 49	M.	0.26	.995	.019	.9	−0.007	Sm.
May 2, 1918...	−0 50	P.	+2.22	+0.533	+0.044	.7	−0.015	Sm.
May 2, 1918...	−0 10	P.	2.22	.533	.034	.7	.005	Sm.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
July 25, 1918...	+1 2	D.	+3.06	−0.756	+0.024	.9	−0.001	Sm.
July 26, 1918...	+1 7	M.	3.07	.768	.013	.6	+0.010	Sm.
Apr. 13, 1919...	−0 10	P.	+5.68	+0.776	+0.079	.9	+0.001	Sm.
Apr. 19, 1919...	+0 39	D.	5.74	.707	.072	1.0	.008	Sm.
Apr. 22, 1919...	−0 41	P.	5.77	.669	.078	1.0	.001	Sm.

Normal Equations:

$$+12.1000\,c + 2.1890\,\mu - 1.2534\,\pi = -0.0921.$$
$$+241.3464 + 15.0235 = +3.4880.$$
$$+6.5207 = +0.3057.$$

Solution:

$$c = -0''.009.$$
$$\mu = +0''.064 \pm 0''.001.$$
$$\pi = +0''.064 \pm 0''.009.$$

p. e. unit weight, $\pm 0''.020$.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
3	−168.5	− 51.5	+0.313	0.32	
6	+191.9	+ 29.1	.233	0.50	+32°.2901
8	80.4	− 42.0	.294	0.34	
12	− 97.1	+136.0	.160	0.26	+32°.2894
π	0.0	0.0		0.69	+32°.2896

No. 33. B.D. −0°.3300. Σ 2173. ($17^h\ 25^m.2$; −0° 59′.)
Mag. 5.34. $\mu = -0^s.0083$; −0″.175. Spectrum G.

The measures are in longitude. This is a binary with a period of 46 years. The combined image of the two components was sensibly round and was bisected in the measures.

Russell gives a hypothetical parallax of +0″.075.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Apr. 24, 1912...	+0 7	B.	−12.07	+0.713	+0.059	.9	−0.001	Be.
May 18, 1912...	0 25	B.	11.83	.378	.053	1.0	0.000	Be.
May 15, 1915...	0 0	P.	− 0.91	+0.435	−0.013	1.0	−0.002	Be.
May 19, 1915...	1 2	Ma.	0.87	.373	.014	.5	.002	Be.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
July 18, 1915...	—0 58	M.	— 0.27	—0.578	—0.033	.5	+0.003	Be.
July 23, 1915...	1 18	M.	0.22	.653	.035	.8	.003	Be.
Aug. 13, 1915...	+0 7	P.	0.01	.878	.030	.8	—0.006	Be.
Aug. 14, 1915...	1 6	Ma.	0.00	.887	.041	1.0	+0.005	Be.
Aug. 13, 1916...	0 41	M.	+ 3.65	—0.885	—0.049	.8	—0.010	Be.
Aug. 18, 1916...	0 3	P.	3.70	.923	.068	1.0	+0.009	Be.
Apr. 16, 1917...	0 10	M.	+ 6.11	+0.803	—0.062	.7	+0.006	Be.
May 12, 1917...	—0 4	M.	6.37	.473	.065	1.0	.004	Be.
May 12, 1917...	+0 35	M.	6.37	.473	.051	1.0	—0.010	Be.

Normal Equations:

$$+11.0000\,c - 0.7200\,\mu - 0.8870\,\pi = -0.2900.$$
$$+403.9814 - 9.1128 = -2.6380.$$
$$+5.1534 = +0.1365.$$

Solution:

$$c = -0''.026.$$
$$\mu = -0''.030 \pm 0''.001.$$
$$\pi = +0''.051 \pm 0''.009.$$

p. e. unit weight, $\pm 0''.019$.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
1	+202.0	— 20.0	+0.197	0.57	—0°.3306
4	261.2	+111.6	.124	0.80	—0°.3307
5	— 66.8	206.0	.263	0.46	
9	132.0	—153.2	.416	0.76	—1°.3343
π	0.0	0.0		0.53	—0°.3300

No. 34. B.D. + 30°.3128. 99b Herculis = Clark 15 = Br. 2278. ($18^h\ 3^m.2$; + 30° 33′.) Mag. 5.21. $\mu = -0^s.0073$; + 0″.063. Spectrum F_8.

The measures were in longitude. This is a binary with a period of 63 years, (Aitken). The components are separated by 1″.3 but appear to be perfectly round, perhaps because the fainter component did not impress itself on the plate on account of the rotating sector.

Other parallaxes published for this star are:

Flint, $+0''.064 \pm 0''.022$, (Transits).
Russell, $+0''.062$, (Hypothetical).
Schlesinger, $0''.025 \pm 0''.006$, (Photographic).
Adams, $0''.105$, (Spectroscopic).

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Aug. 18, 1915...	—0 13	P.	—3.88	—0.815	+0.069	.7	—0.001	Be.
Aug. 23, 1915...	0 16	P.	3.83	.861	.054	.9	+0.014	Sm.
Aug. 25, 1915...	0 11	P.	3.81	.878	.065	.5	.003	Be.
Apr. 30, 1916...	—0 4	P.	—1.32	+0.779	.070	1.0	+0.001	Be.
May 13, 1916...	0 10	M.	1.19	.623	.072	1.0	— .003	Be.
May 21, 1916...	+0 23	P.	1.11	.512	.084	.6	.017	Sm.
Aug. 28, 1916...	+0 6	P.	—0.12	—0.907	.052	.8	—0.002	Be.
Sept. 9, 1916...	0 27	Ma.	0.00	.975	.050	.9	.002	Be.
Sept. 10, 1916...	0 15	P.	+0.01	.978	.056	.9	.008	Sm.
May 12, 1917...	+0 52	M.	+2.45	+0.640	.038	.7	+0.013	Sm.
July 23, 1917...	+0 16	M.	+3.17	—0.494	.043	.7	—0.006	Sm.
Aug. 28, 1917...	—0 2	P.	3.53	.906	.030	1.0	+0.002	Sm.
May 16, 1918...	+0 33	P.	+6.14	+0.591	.029	.8	0.004	Sm.

Normal Equations:

$$+10.5000\,c + 1.0450\,\mu - 2.8895\,\pi = +0.5687.$$
$$+88.7641 \quad +4.5279 \quad = -0.3269.$$
$$+6.6022 \quad = -0.1268.$$

Solution:

$$c = +0''.057.$$
$$\mu = -0''.023 \pm 0''.003.$$
$$\pi = +0''.043 \pm 0''.010.$$

p. e .unit weight, $\pm 0''.024$.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
1	—244.4	— 50.0	+0.216	0.76	+30°.3119
5	+ 49.6	140.0	.204	0.79	+30°.3129
8	135.6	+162.0	.355	0.56	
10	— 24.8	— 80.4	.225	0.56	
π	0.0	0.0		0.65	+30°.3128

No. 35. B.D. + 38°.3466. Σ 2481 (π); Secchi 2 (π^1). ($19^h\ 7^m.7$; 38° 36′.) Mag. 8.0–8.0. $\mu = -0^s.0210; -0''.103$.

This is a triple star. We have designated the component A by π, and by π^1, the components B C, (Secchi 2), which are separated by 0″.24, and whose combined image is sensibly round. In measuring π^1 we bisected the combined image of the components. The proper motion of A is not the same as that of B C. The measures are in longitude. The same comparison field was used for both components. Other parallaxes published are:

Russell, (Hypothetical), + 0″.021.
Mitchell, (Photographic), π + 0″.019 ± 0.010.
π^1 + 0″.046 ± 0.011.

TABLE AND SOLUTIONS FOR π.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
May 18, 1914...	+0 10	M.	−3.86	+0.876	+0.080	.7	+0.001	M.
June 1, 1914...	0 8	M.	3.72	.736	.077	.5	.002	M.
Sept. 2, 1914...	−0 6	P.	−2.79	−0.675	+0.063	.7	−0.001	M.
Sept. 5, 1914...	0 15	P.	2.76	.712	.055	.5	+0.007	M.
May 9, 1915...	0 21	P.	−0.30	+0.942	+0.036	.5	0.000	M.
May 19, 1915...	+0 15	Ma.	0.20	.871	.041	.9	−0.006	M.
Aug. 23, 1915...	0 1	P.	+0.76	−0.546	+0.020	1.0	−0.003	M.
Sept. 10, 1915...	−0 10	S.	0.94	.773	.009	.9	+0.005	M.
Sept. 12, 1915...	+0 5	P.	0.96	.793	.022	.7	−0.008	M.
June 1, 1916...	−0 6	P.	+3.59	+0.730	−0.020	.9	+0.007	M.
June 12, 1916...	0 2	P.	3.70	.591	.022	1.0	.006	M.
June 13, 1916...	0 18	P.	3.71	.577	.006	.9	−0.010	M.

Normal Equations:

$$+9.200\,c + 4.323\,\mu + 1.377\,\pi = +0.220.$$
$$+66.383 + 3.137 = -0.700.$$
$$+4.912 = +0.018.$$

Solution:

$$c = +0''.029.$$
$$\mu = -0''.059 \pm 0''.002.$$
$$\pi = +0''.016 \pm 0''.009.$$

p. e. unit weight, ± 0″.019.

COMPARISON STARS.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
1	+166.0	+26.8	+0.279	0.57	+38°.3473
5	74.4	—36.4	.305	0.54	+38°.3469
7	— 57.6	+94.4	.176	0.50	+38°.3463
13	243.2	—50.8	.240	0.44	
π	0.0	0.0		0.45	+38°.3466

TABLE AND SOLUTIONS FOR π'.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
May 18, 1914...	+0 10	M.	—3.64	+0.876	+0.038	1.0	+0.005	M.
June 1, 1914...	0 8	M.	3.50	.736	.034	.5	.008	M.
Aug. 18, 1914...	+0 8	P.	—2.72	—0.467	+0.042	.6	—0.007	M
Sept. 2, 1914...	—0 6	P.	2.57	.675	.032	.9	+0.002	M.
Sept. 5, 1914...	0 15	P.	2.54	.712	.037	.5	—0.003	M.
May 19, 1915...	+0 15	Ma.	+0.02	+0.871	+0.011	1.0	—0.012	M.
Aug. 23, 1915...	+0 1	P.	+0.98	—0.546	—0.012	1.0	+0.003	M.
Sept. 10, 1915...	—0 10	S.	1.16	.773	.016	.5	.005	M.
Sept. 12, 1915...	+0 5	P.	1.18	.793	.007	.5	—0.004	M.
June 1, 1916...	—0 6	P.	+3.81	+0.730	—0.050	1.0	+0.004	M.
June 12, 1916...	0 2	P.	3.92	.591	.051	.5	.004	M.
June 13, 1916...	0 18	P.	3.93	.577	.044	.5	—0.003	M.

Normal Equations:

$$+8.5000\,c - 0.7000\,\mu + 0.8563\,\pi = +0.0175.$$
$$+65.2354 + 2.3906 = -0.7892.$$
$$+4.3766 = -0.0378.$$

Solution:

$$c = +0''.001.$$
$$\mu = -0''.056 \pm 0''.002.$$
$$\pi = -0''.011 \pm 0''.009.$$

p. e. unit weight, $\pm$ 0".018.

COMPARISON STARS.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
1	+166.0	+26.8	+0.278	0.57	+38°.3473
5	74.4	—36.4	.307	0.54	+38°.3469
7	— 57.6	+94.4	.172	0.50	+38°.3463
13	243.2	—50.8	.243	0.44	
π'	0.4	0.6		0.45	+38°.3466

No. 36. B.D. + 27°.3391. Σ 2525. ($19^h\ 22^m.5$; + 27° 7′.)
Mag. 7.5. Spectrum G.

The measures are in longitude. This is a binary of long and uncertain period. The components are separated by about 0″.5. The combined image of the components seemed slightly elongated. This image was bisected in the measures. Russell gives a hypothetical parallax of 0″.025 for this star.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, *T.*	Parallax Factor, *P.*	Solution, *m.*	Wt., *p.*	Res., *v.*	Measured by.
Aug. 25, 1915...	+0 10	P.	—3.59	—0.557	—0.155	.8	+0.007	Sm.
Sept. 7, 1915...	—0 3	P.	3.46	.725	.143	1.0	—0.005	Be.
Sept. 13, 1915...	+0 2	P.	3.40	.791	.155	.8	+0.008	Be.
May 20, 1916...	+0 14	M.	—0.90	+0.861	.115	.5	—0.011	Sm.
June 1, 1916...	—0 8	P.	0.78	.738	.126	.5	.000	Be.
June 4, 1916...	0 7	P.	0.75	.702	.141	.6	+0.015	Sm.
June 12, 1916...	+0 19	S.	0.67	.600	.117	.8	—0.008	Be.
Aug. 18, 1916...	+0 20	P.	—0.00	—0.465	.116	.9	—0.008	Sm.
Aug. 25, 1916...	0 37	P.	+0.07	.567	.122	.9	.002	Be.
Sept. 21, 1916...	0 52	M.	0.34	.872	.123	.8	.000	Be.
June 1, 1918...	—0 47	D.	+6.52	+0.743	.083	1.0	+0.006	Sm.
June 8, 1918...	0 56	D.	6.59	.660	.074	.9	— .003	Sm.

Normal Equations:

$$+9.5000\,c + 1.9080\,\mu - 0.3921\,\pi = -1.1519.$$
$$+114.6285 + 13.4329 = +0.5674.$$
$$+4.5374 = +0.1503.$$

Solution:

$$c = -0''.122.$$
$$\mu = +0''.031 \pm 0''.003.$$
$$\pi = +0''.013 \pm 0''.013.$$

p. e. unit weight, ± ″.023.

Comparison Stars.

No.	*X.*	*Y.*	Dependence.	Diameter.	B. D. No.
1	—163.6	—171.2	+0.332	0.59	+26°.3550
3	+ 72.8	76.8	.210	0.40	
5	147.6	+109.6	.193	0.44	
6	41.2	196.4	.265	0.39	
π	0.0	0.0		0.63	+27°.3391

No. 37. B.D. + 50°.2847–8. 16 Cygni. ($19^h\ 39^m.1$; + 50° 18′.)

Mag. 6.26–6.37. $\mu = \begin{cases} -0^s.0162; -0''.152. \\ -0^s.0138; -0''.156. \end{cases}$ **Spectrum F.**

The measures were in longitude. This is a star of the 61 Cygni type. Other parallaxes published are:

Slocum and Mitchell, Preceding, $+0''.043 \pm 0''.008$.
Following, $+0''.028 \pm 0''.009$.

Adams, Preceding, $+0''.063$.
Following, $+0''.040$.

Jost, $+0''.15 \pm 0''.031$.

The same comparison field was used for both components.

TABLE AND SOLUTIONS FOR THE PRECEDING COMPONENT OF 16 CYGNI.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Sept. 19, 1915...	+0 6	M.	−4.09	−0.591	−0.094	1.0	+0.008	M.
June 5, 1916...	+0 16	S.	−1.49	+0.917	.093	.7	−0.004	M.
June 13, 1916...	−0 9	P.	1.41	.851	.079	.9	.019	M.
June 30, 1916...	0 44	P.	1.24	.663	.111	.8	+0.010	M.
July 7, 1916...	0 59	S.	1.17	.569	.103	1.0	.001	M.
Sept. 17, 1916...	+0 11	M.	−0.45	−0.573	.128	.8	+0.010	M.
Sept. 19, 1916...	0 7	M.	0.43	.600	.119	.8	.001	M.
Sept. 25, 1916...	−0 42	P.	0.37	.678	.103	.8	−0.016	M.
Sept. 28, 1916...	+0 12	M.	0.34	.715	.116	.7	.004	M.
Oct. 6, 1916...	−0 15	P.	0.26	.803	.123	.9	+0.002	M.
June 17, 1917...	−0 6	P.	+2.28	+0.815	.138	.6	+0.008	M.
June 17, 1917...	+0 8	P.	2.28	.815	.138	.9	.008	M.
Oct. 2, 1917...	+0 8	M.	+3.35	−0.757	.150	1.0	−0.003	M.
Oct. 3, 1917...	−0 10	P.	3.36	.768	.152	.8	.001	M.

Normal Equations:

$$+11.7000\,c - 0.5780\,\mu - 0.9367\,\pi = -1.3725.$$
$$+51.2834 - 1.7842 = -0.3968.$$
$$+6.1629 = +0.1747.$$

Solution:

$$c = -0''.117.$$
$$\mu = -0''.041 \pm 0''.004.$$
$$\pi = +0''.037 \pm 0''.012.$$

p. e. unit weight, $\pm 0''.028$.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
3	+ 69.2	+145.6	+0.296	0.50	
4	— 98.8	128.4	.121	0.47	
7	188.4	—184.8	.184	0.50	+49°.3079
10	+ 66.0	62.0	.399	0.60	+50°.2853
π'	0.0	0.0		0.71	+50°.2847

Table and Solutions for the Following Component of 16 Cygni.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Sept. 19, 1915...	+0 6	M.	—4.09	—0.591	—0.104	1.0	+0.004	M.
June 5, 1916...	+0 16	S.	—1.49	+0.917	.116	.7	+0.001	M.
June 13, 1916...	—0 9	P.	1.41	.851	.109	.8	—0.007	M.
June 30, 1916...	0 44	P.	1.24	.663	.124	.8	+0.006	M.
July 7, 1916...	0 59	S.	1.17	.569	.114	.9	—0.005	M.
Sept. 17, 1916...	+0 11	M.	—0.45	—0.573	.128	.8	—0.002	M.
Sept. 19, 1916...	0 7	M.	0.43	.600	.133	.9	+0.003	M.
Sept. 25, 1916...	—0 42	P.	0.37	.678	.124	.8	—0.007	M.
Sept. 26, 1916...	0 37	P.	0.36	.691	.133	.8	+0.002	M.
Oct. 6, 1916...	0 15	P.	0.26	.803	.131	.9	—0.001	M.
June 17, 1917...	—0 6	P.	+2.28	+0.815	.153	.6	+0.007	M.
June 17, 1917...	+0 8	P.	2.28	.815	.148	.8	.002	M.
Oct. 2, 1917...	0 8	M.	+3.35	—0.757	.158	1.0	—0.003	M.
Oct. 3, 1917...	—0 10	P.	3.36	.768	.166	.5	+0.005	M.

Normal Equations:

$$+11.3000\,c - 1.6490\,\mu - 1.0421\,\pi = -1.4710.$$
$$+47.0822 - 0.9547 = -0.1719.$$
$$+5.8749 = +0.1666.$$

Solution:

$$c = -0''.131.$$
$$\mu = -0''.038 \pm 0''.002.$$
$$\pi = +0''.018 \pm 0''.006.$$

p. e. unit weight. $\pm$ 0''..014.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
3	+ 69.2	+145.6	+0.297	0.50	
4	— 98.8	128.4	.089	0.47	
7	188.4	—184.8	.182	0.50	+49°.3079
10	+ 66.0	62.0	.432	0.60	+50°.2853
π	+ 6.3	— 6.4		0.65	+50°.2848

No. 38. B.D. + 34°.3727. OΣ 387. ($19^h\ 45^m.0$; + 35° 4′.)
Mag. 6.9. $\mu = +0^s.0068$; + 0″.084. Spectrum F_2.

This is a binary of long, uncertain period. The measures were made in longitude. Russell found for this star a hypothetical parallax of 0″.022.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Sept. 7, 1914...	—0 37	P.	—4.13	—0.518	—0.090	.9	+0.008	M.
Sept. 8, 1914...	0 14	P.	4.12	.595	.090	.5	.008	M.
Sept. 9, 1914...	0 28	P.	4.11	.609	.079	.5	—0.003	M.
Sept. 10, 1914...	0 36	P.	4.10	.621	.072	.9	.010	M.
June 22, 1915...	+0 0	M.	—1.25	+0.632	.067	.6	+0.011	M.
Sept. 10, 1915...	+0 26	S.	—0.45	—0.619	.056	.8	+0.002	M.
Oct. 3, 1915...	0 9	S.	0.22	.871	.043	1.0	—0.010	M.
June 1, 1916...	+0 23	P.	+2.20	+0.858	.034	1.0	+0.004	M.
June 4, 1916...	0 0	P.	2.23	.829	.022	.7	—0.008	M.
June 13, 1916...	0 11	P.	2.32	.734	.015	.9	.014	M.
June 21, 1916...	0 5	S.	2.40	.634	.037	.5	+0.008	M.
June 22, 1916...	—0 36	P.	2.41	.620	.033	.7	.004	M.
Sept. 25, 1916...	+0 22	P.	+3.36	—0.803	.029	1.0	—0.003	M.
Sept. 28, 1916...	0 42	M.	3.39	.832	.035	.5	+0.009	M.

Normal Equations:

$$+10.5000\,c + 0.9390\,\mu - 1.0399\,\pi = -0.5093.$$
$$+85.7079 + 9.2814 = +0.6305.$$
$$+5.4813 = +0.1379.$$

Solution:

$$c = -0''.049.$$
$$\mu = +0''.035 \pm 0''.003.$$
$$\pi = +0''.015 \pm 0''.012.$$

p. e. unit weight, $\pm$ 0″.025.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
3	+168.2	— 18.9	+0.219	0.50	+34°.3735
9	—123.3	+ 43.6	.295	0.88	+35°.3809
11	98.3	— 79.7	.332	0.35	+34°.3722
15	+209.3	+115.9	.154	0.41	
π	0.0	0.0		0.82	+34°.3727

No. 39. B.D. + 6°.4357. β Aquilae = 0Σ 532. (19^h $50^m.4$; + 6° 9′.) Mag. 3.90. $\mu = +0^s.0023$; $-0''.483$.

Spectrum K.

The measures are in longitude. This star is B. G. C. 9724. The distance between the components is 12″.08 and their magnitudes are 3.4 and 11.3 respectively. The brighter component only was recorded. Burnham says, "But little change in either angle or distance but components have a large common proper motion."

Other published parallaxes are:

Mitchell, (Photographic), $+0''.066 \pm 0''.011$.
Adams, (Spectroscopic), $+0''.072$.
Russell, (Hypothetical), $+0''.053$.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Sept. 29, 1915...	+0 33	P.	—3.16	—0.904	+0.097	.5	—0.002	Be.
Oct. 10, 1915...	0 29	S.	3.05	.967	.106	.8	.012	Sm.
Oct. 12, 1915...	—0 4	P.	3.03	.974	.092	.9	+0.002	Sm.
Oct. 24, 1915...	+0 53	M.	2.91	.994	.099	.8	—0.006	Be.
June 1, 1916...	+0 39	P.	—0.70	+0.772	.112	.5	+0.001	Sm.
June 4, 1916...	0 16	P.	0.67	.738	.096	.6	.016	Sm.
June 5, 1916...	0 48	S.	0.66	.728	.116	1.0	—0.004	Be.
June 12, 1916...	0 34	S.	0.59	.640	.111	.7	.000	Be.
Sept. 10, 1916...	+0 44	P.	+0.31	—0.732	.088	.5	+0.001	Sm.
Oct. 6, 1916...	0 5	P.	0.57	.952	.079	.5	.006	Sm.
Oct. 7, 1916...	—0 18	Ma.	0.58	.956	.073	.9	.012	Be.
June 8, 1918...	+0 2	D.	+6.67	+0.697	.094	1.0	—0.002	Sm.
June 8, 1918...	0 18	D.	6.67	.697	.097	1.0	.005	Sm.

Normal Equations:

$$+9.7000\,c + 3.4020\,\mu - 1.2010\,\pi = +0.9428.$$
$$+118.1568 + 15.8604 = +0.2548.$$
$$+6.7576 = -0.0648.$$

Solution:

$$c = +0''.100.$$
$$\mu = -0''.012 \pm 0''.003.$$
$$\pi = +0''.067 \pm 0''.011.$$

p. e. unit weight, $\pm 0''.022$.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
1	+ 98.0	—174.4	+0.265	0.87	+5°.4344
4	110.4	+144.0	.331	0.94	+6°.4362
5	—114.8	92.0	.243	0.46	
14	214.4	—147.6	.161	0.60	+5°.4332
π	0.0	0.0		0.77	+6°.4357

No. 40. B.D. + 20°.4452–3. Σ 2637 = Θ Sagittae. $20^h\ 5^m.5$; + 20° 37′.) Mag. 7.0–7.8–8.3. $\mu = \begin{cases} +0^s.0039; -0''.096. \\ +0^s0036; -0''.112. \\ -0^s.0003; -0''.010. \end{cases}$

This star is number 9955 in B. G. C. In the tables that follow I have used the designation given by Burnham. No other parallax of this star has been published. The measures were in longitude. The same comparison field was used for each of the three components.

Table and Solutions for Σ 2637 A.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Sept. 3, 1915...	+0 34	S.	—3.39	—0.517	—0.081	.7	—0.001	Be.
Sept. 7, 1915...	0 21	P.	3.35	.574	.082	.9	0.000	Be.
June 4, 1916...	+0 21	P.	—0.64	+0.832	.068	1.0	+0.004	Sm.
June 13, 1916...	0 14	P.	0.55	.737	.062	.5	—0.002	Be.
June 22, 1916...	—0 21	P.	0.46	.625	.060	.5	.004	Be.
Sept. 25, 1916...	+0 31	P.	+0.49	—0.800	.064	1.0	—0.001	Be.
Oct. 5, 1916...	0 37	P.	0.59	.889	.068	1.0	+0.003	Sm.
Oct. 12, 1916...	0 41	M.	0.66	.935	.065	.8	0.000	Sm.
June 7, 1918...	+0 2	Ma.	+6.69	+0.807	.028	.5	—0.002	Sm.

Normal Equations:

$$+6.8000\,c - 1.6290\,\mu - 1.3190\,\pi = -0.4511.$$
$$+42.1021 + 3.4070 = +0.3175.$$
$$+4.0341 = +0.1173.$$

Solution:

$$c = -0''.064.$$
$$\mu = +0''.022 \pm 0''.001.$$
$$\pi = +0''.019 \pm 0''.004.$$

p. e. unit weight, ± 0″.008.

COMPARISON STARS.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
2	+126.6	+ 39.1	+0.478	1.11	+20°.4460
4	—221.1	48.2	.336	0.81	+20°.4444
12	101.1	—103.1	.041	0.40	
14	+205.7	119.8	.145	0.45	
A	11.8	+ 13.2		1.16	+20°.4453

TABLE AND SOLUTIONS FOR Σ 2637 B.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Sept. 3, 1915...	+0 34	S.	—4.53	—0.517	+0.002	.6	—0.008	Be.
Sept. 7, 1915...	0 21	P.	4.49	.574	—0.001	.9	.005	Be.
June 4, 1916...	+0 21	P.	1.78	+0.832	0.006	.9	+0.002	Sm.
June 13, 1916...	0 14	P.	1.69	.737	.008	1.0	0.000	Be.
June 22, 1916...	—0 21	P.	1.60	.625	.004	1.0	+0.005	Be.
Sept. 10, 1916...	+1 3	P.	0.80	—0.624	+0.011	.8	—0.001	Be.
Sept. 25, 1916...	0 31	P.	0.65	.800	.017	1.0	.006	Be.
Oct. 5, 1916...	0 37	P.	0.55	.889	.000	1.0	+0.011	Sm.
Oct. 12, 1916...	0 41	M.	0.48	.935	.008	.5	.003	Sm.
June 1, 1918...	0 0	D.	+5.49	+0.865	+0.040	1.0	0.000	Sm.
June 7, 1918...	—0 18	Ma.	5.55	.807	.035	.5	+0.005	Sm.
June 7, 1918...	+0 2	Ma.	5.55	.807	.047	.9	— .007	Sm.

Normal Equations:

$$+10.1000\,c - 0.4710\,\mu + 0.6231\,\pi = +0.1473.$$
$$+113.3401 + 12.7983 = +0.5006.$$
$$+ 5.8526 = +0.0728.$$

Solution:

$$c = +0''.015.$$
$$\mu = +0''.020 \pm 0''.002.$$
$$\pi = +0''.007 \pm 0''.009.$$

p. e. unit weight, ± 0″.018.

COMPARISON STARS.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
2	+126.6	+ 39.1	+0.485	1.11	+20°.4460
4	—221.1	48.2	.343	0.81	+20°.4444
12	101.1	—103.1	.034	0.40	
14	+205.7	119.8	.138	0.45	
B	10.5	+ 15.4		0.53	

TABLE AND SOLUTIONS FOR Σ 2637 C.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, *T.*	Parallax Factor, *P.*	Solution, *m.*	Wt., *p.*	Res., *v.*	Measured by.
Sept. 3. 1915...	+0 34	S.	—4.53	—0.517	—0.104	1.0	—0.001	Be.
Sept. 7, 1915...	0 21	P.	4.49	.574	.109	1.0	+0.004	Be.
June 4, 1916...	+0 21	P.	—1.78	+0.832	.106	1.0	+0.007	Sm.
June 13, 1916...	0 14	P.	1.69	.737	.091	.9	—0.009	Be.
June 22, 1916...	—0 21	P.	1.60	.625	.100	1.0	0.000	Be.
Sept. 10, 1916...	+1 3	P.	—0.80	—0.624	.095	.8	—0.011	Be.
Sept. 25, 1916...	0 31	P.	0.65	0.800	.102	.8	.005	Be.
Oct. 5, 1916...	0 37	P.	0.55	.889	.116	1.0	+0.008	Sm.
Oct. 12, 1916...	0 41	M.	0.48	.935	.109	1.0	.001	Sm.
June 1, 1918...	0 0	D.	+5.49	+0.865	.116	.7	+0.014	Sm.
June 7, 1918...	—0 18	Ma.	5.55	.807	.094	.6	—0.008	Sm.
June 7, 1918...	+0 2	Ma.	5.55	.807	.096	.6	.006	Sm.

Normal Equations:

$$+10.4000\,c - 5.6080\,\mu - 0.3600\,\pi = -1.0787.$$
$$+108.4239 + 11.7693 = +0.5991.$$
$$+5.9618 = +0.0608.$$

Solution:

$$c = -0''.104.$$
$$\mu = -0''.002 \pm 0''.003.$$
$$\pi = +0''.022 \pm 0''.011.$$

p. e. unit weight, $\pm 0''.024$.

COMPARISON STARS.

No.	*X.*	*Y.*	Dependence.	Diameter.	B. D. No.
2	+126.6	+ 39.1	+0.402	1.11	+20°.4460
4	—221.1	48.2	.328	0.81	+20°.4444
12	101.1	—103.1	.110	0.40	
14	+205.7	119.8	.160	0.45	
π	0.0	0.0		0.91	+20°.4452

No. 41. B.D.+ 43°.3513. OΣ 400. ($20^h\ 6^m.9$; = 43° 39′.) Mag. 7.5–8.5.

The measures are in longitude. This is a binary with a period of 74.5 years (Burnham). The components are separated by 0″.31. The combined image, which is sensibly round, was bisected in the measuring. Russell finds a hypothetical parallax of 0″.021.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, *T*.	Parallax Factor, *P*.	Solution, *m*.	Wt., *p*.	Res., *v*.	Measured by.
Sept. 21, 1914...	—0 13	M.	—2.97	—0.580	—0.109	1.0	+0.003	Be.
Sept. 22, 1914...	0 3	M.	2.96	.594	.105	.8	—0.001	Be.
Oct. 2, 1914...	+0 4	M.	2.86	.721	.109	1.0	+0.001	Be.
June 23, 1915...	—0 3	Ma.	—0.22	+0.790	.093	1.0	0.000	Be.
June 24, 1915...	+0 2	M.	0.21	.780	.087	.7	—0.006	Be.
June 27, 1915...	0 7	M.	0.18	.745	.095	.5	+0.002	Be.
Sept. 15, 1915...	—0 40	S.	+0.62	—0.491	.104	.9	0.000	Be.
Sept. 25, 1915...	0 16	Ma.	0.72	.631	.113	.7	+0.007	Be.
Oct. 23, 1915...	+0 8	P.	1.00	.913	.102	1.0	—0.006	Be.
June 30, 1916...	—0 30	P.	+3.51	+0.701	.093	1.0	0.000	Be.
July 7, 1916...	0 33	S.	3.58	.611	.096	1.0	+0.004	Be.

Normal Equations:

$$+9.600\,c + 4.970\,\mu - 0.552\,\pi = -0.967.$$
$$+50.951 + 7.979 = +0.038.$$
$$+4.660 = +0.100.$$

Solution:

$$c = -0''.100.$$
$$\mu = +0''.001 \pm 0''.002.$$
$$\pi = +0''.043 \pm 0''.007.$$

p. e. unit weight, $\pm 0''.012$.

Comparison Stars.

No.	*X*.	*Y*.	Dependence.	Diameter.	B. D. No.
1	—200.0	+140.8	+0.152	0.61	+43°.3506
2	124.0	— 47.2	.354	0.54	+43°.3509
5	+ 81.6	+ 33.6	.215	0.63	+43°.3517
9	195.2	— 50.4	.279	0.48	+43°.3521
π	0.0	0.0		0.82	+43°.3513

No. 42. B.D. + 15°.4255. γ Delphini. ($20^h\ 42^m.0$; + 15° 46′.)

Mag. A. 4.49. B. 5.47. $\mu =$ **A. — 0ˢ.0023; — 0″.204. B. — 0ˢ.0014; — 0″.194.** **Spectrum G_5.**

This star was measured in right ascension. The components have a common proper motion and some relative motion. Other published parallaxes are by

Russell, (Hypothetical), $+0''.045$.
Mitchell, (Photogrpahic), A. $+0''.071 \pm 0''.009$.
B. $+0''.063 \pm 0''.009$.
Adams, (Spectroscopic), $+0''.022$.

The same comparison field was used for both A and B.

TABLE AND SOLUTIONS FOR A.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Sept. 13, 1915...	—0 12	S.	—4.59	—0.65	—0.028	.8	+0.013	M.
Sept. 14, 1915...	+0 3	P.	4.58	.66	.013	1.0	—0.002	M.
Nov. 5, 1915...	1 10	M.	4.06	.95	.015	.5	.001	M.
June 13, 1916...	+0 4	P.	—1.85	+0.70	.023	.5	+0.001	M.
June 21, 1916...	0 15	S.	1.77	.60	.022	.9	0.000	M.
June 30, 1916...	—0 17	Ma.	1.68	.48	.019	.8	—0.003	M.
July 7, 1916...	0 20	W.	1.61	.37	.011	.7	.011	M.
Sept. 25, 1916...	+0 27	P.	—0.81	—0.78	.022	1.0	+0.001	M.
Oct. 6, 1916...	—0 11	P.	0.70	.87	.023	1.0	.002	M.
Oct. 26, 1916...	+0 25	M.	0.50	.96	.029	.5	.008	M.
June 7, 1918...	—0 1	Ma.	+5.39	+0.77	.032	.5	—0.001	M.
June 15, 1918...	0 28	D.	5.47	.68	.038	.8	+0.005	M.
July 1, 1918...	1 2	P.	5.63	.47	.023	.5	—0.010	M.
July 2, 1918...	0 33	D.	5.64	.46	.031	.9	.002	M.

Normal Equations:

$$+10.4000\,c - 2.0690\,\mu - 0.6740\,\pi = -0.2424.$$
$$+138.8869 \quad +14.8623 = -0.1464.$$
$$+4.8674 = 0.0000.$$

Solution:

$c = -0''.024.$
$\mu = -0''.007 \pm 0''.002.$
$\pi = +0''.007 \pm 0''.010.$

p. e. unit weight, $\pm 0''.018$.

COMPARISON STARS.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
2	+208.6	— 12.2	+0.279	0.90	+15°.4258
3	—127.2	22.7	.478	0.80	+15°.4248
6	268.3	+113.5	.082	0.49	+15°.4244
9	+153.0	30.6	.161	0.62	
A	0.0	0.0		1.06	+15°.4255

TABLE AND SOLUTIONS FOR B.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Sept. 13, 1915...	—0 12	S.	—4.47	—0.65	+0.107	.5	+0.018	M.
Sept. 14, 1915...	+0 3	P.	4.46	.66	.133	.7	—0.008	M.
Nov. 5, 1915...	1 10	M.	3.94	.95	.117	.8	+0.009	M.
June 13, 1916...	+0 4	P.	1.73	+0.70	.109	.5	+0.013	M.
June 21, 1916...	0 15	S.	1.65	.60	.126	.6	—0.004	M.
June 22, 1916...	—0 25	P.	1.64	.58	.126	.5	.004	M.
June 30, 1916...	0 17	Ma.	1.56	.48	.119	.6	+0.003	M.
July 7, 1916...	0 20	W.	1.49	.37	.134	1.0	—0.012	M.
Sept. 25, 1916...	+0 27	P.	0.69	—0.78	.118	.5	+0.006	M.
Oct. 6, 1916...	—0 6	P.	0.58	.87	.136	.9	—0.012	M.
Oct. 26, 1916...	+0 30	M.	0.38	.96	.124	.5	.000	M.
June 7, 1918...	—0 1	Ma.	+5.51	+0.77	.127	.5	—0.008	M.
June 15, 1918...	0 28	D.	5.59	.68	.110	1.0	+0.009	M.
July 1, 1918...	1 2	P.	5.75	.47	.122	.5	—0.002	M.
July 2, 1918...	0 33	D.	5.76	.46	.119	1.0	+0.001	M.

Normal Equations:

$$+10.1000\,c + 2.3130\,\mu + 0.2180\,\pi = +1.2356.$$
$$+141.2385 + 14.6610 = +0.2092.$$
$$+ 4.6696 = +0.0138.$$

Solution:

$$c = +0''.122.$$
$$\mu = -0''.002 \pm 0''.003.$$
$$\pi = -0''.008 \pm 0''.015.$$

p. e. unit weight, $\pm 0''.026$.

COMPARISON STARS.

2	+208.6	— 12.2	+0.276	0.90	+15°.4258
3	—127.2	22.7	.483	0.80	+15°.4248
6	268.3	+113.5	.084	0.49	+15°.4244
9	+153.0	30.6	.157	0.62	
B	— 2.3	+ 0.0		0.88	

No. 43. B.D. + 3°.4473. Σ 2737 = ε Equulei. (20^h $54^m.1$; + 3° 55′.) Mag. 5.29. $\mu = -0^s.0084; -0''.144.$

Spectrum F_5.

This is a triple system. The three components, called by Burnham, A (mag. 5.1), B (mag, 6.2), and C (mag. 7.1), have a common proper motion. A and B, separated by 0″.62, form a binary of uncertain period. The measures were made by bisecting the combined image of these two components, which is sensibly round. The measures are in longitude. Other published parallaxes are:

Russell, (Hypothetical), + 0″.022.
Mitchell, (Photographic), + 0″.043 ± 0″.010.
Adams, (Spectroscopic), + 0″.038.

Mitchell found for C a parallax of 0″.002 ± 0″.012. We did not measure C because its images on our plates were very faint.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Oct. 30, 1915...	+0 13	Ma.	—3.55	—0.974	+0.132	.8	—0.010	Sm.
Nov. 7, 1915...	0 44	S.	3.47	.989	.113	1.0	+0.008	Be.
June 13, 1916...	+0 20	P.	—1.28	+0.825	.100	.5	+0.010	Sm.
June 22, 1916...	—0 10	P.	1.19	.727	.106	.5	.003	Sm.
June 30, 1916...	+0 20	Ma.	1.11	.627	.110	.7	—0.002	Be.
July 4, 1916...	0 50	M.	1.07	.576	.116	.8	.009	Be.
Sept. 28, 1916...	+0 30	M.	—0.21	—0.746	.096	.5	—0.001	Be.
Oct. 6, 1916...	0 19	P.	0.13	.829	.103	.6	.009	Sm.
Oct. 7, 1916...	0 28	Ma.	0.12	.838	.095	.5	.001	Be.
Oct. 8, 1916...	0 0	M.	0.11	.847	.082	.8	+0.012	Sm.
June 8, 1918...	—0 7	D.	+5.97	+0.875	.044	1.0	+0.007	Sm.
July 7, 1918...	0 46	P.	6.26	.536	.054	1.0	—0.007	Sm.

Normal Equations:

$$+8.7000\,c + 2.7210\,\mu - 0.6485\,\pi = +0.8123.$$
$$+100.3061 + 13.1041 = -0.5091.$$
$$+5.5508 = -0.1481.$$

Solution:

$$c = +0''.096.$$
$$\mu = -0''.038 \pm 0''.003.$$
$$\pi = +0''.018 \pm 0''.012.$$

p. e. unit weight, ± 0″.024.

COMPARISON STARS.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
3	+223.9	— 75.0	+0.332	0.45	
6	12.1	62.0	.059	0.54	
10	— 83.9	21.0	.128	0.37	
12	134.4	+ 64.7	.481	0.47	+3°.4469
π	0.0	0.0		0.66	+3°.4473

No. 44. B.D. + 45°.3558. 71 g Cygni. ($21^h\ 25^m.8$; + 46° 6′.) Mag. 5.35. $\mu = -0^s.0044$; + 0″.104. Spectrum K.

The measures were in right ascension. Other published parallaxes are:

Abetti, (Transits), + 0″.056 ± 0″.043.
Schlesinger, (Photographic), + 0″.040 ± 0″.043.
Adams, (Spectroscopic), + 0″.014.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Sept. 22, 1914...	—0 29	M.	—2.67	—0.61	—0.150	.8	—0.003	S.
Nov. 2, 1914...	+0 6	P.	2.26	.93	.155	.8	+0.002	S.
June 22, 1915...	0 5	M.	+0.06	+0.72	.135	8.	—0.001	S.
June 24, 1915...	0 2	M.	0.08	.70	.125	1.0	.011	S.
June 28, 1915...	—0 1	Ma.	0.12	.66	.138	.9	+0.002	S.
July 5, 1915...	0 4	Ma.	0.19	.56	.147	.8	.011	S.
July 6, 1915...	0 0	M.	0.20	.55	.135	1.0	—0.001	S.
July 8, 1915...	—0 3	M.	0.22	.52	.135	.9	.001	S.
Sept. 10, 1915...	—0 18	S.	+0.86	—0.41	.142	.7	+0.003	S.
Nov. 17, 1915...	0 0	P.	1.54	.94	.138	.8	—0.002	S.
Nov. 27, 1915...	+0 19	M.	1.64	.92	.138	.6	.001	S.

Normal Equations:

$$+9.100\,c - 0.340\,\mu + 0.513\,\pi = -1.268.$$
$$+13.953 + 1.134 = +0.102.$$
$$+4.415 = -0.042.$$

Solution:

$$c = -0''.140.$$
$$\mu = +0''.016 \pm 0''.005.$$
$$\pi = +0''.027 \pm 0''.008.$$

p. e. unit weight, ± 0″.018.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
3	— 55.2	—139.2	+0.223	0.54	+46°.3331
4	127.1	83.0	.391	0.55	+46°.3325
10	+182.2	+222.2	.386	0.48	+45°.3567
π	8.2	22.1		0.89	+45°.3558

No. 45. B.D. + 45°.3562. ($21^h\ 26^m.1 + 46°\ 7'.2$.) Mag. 9.5.

The measures were in right ascension. No other parallax has been published.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p.	Res., v.	Measured by.
Sept. 22, 1914...	—0 29	M.	—2.66	—0.61	—0.146	.7	+0.008	S.
Nov. 2, 1914...	+0 6	P.	2.25	.93	.130	.8	—0.007	S.
June 22, 1915...	+0 5	M.	+0.07	+0.72	.137	.8	+0.002	S.
June 28, 1915...	—0 1	Ma.	0.13	.66	.130	1.0	—0.005	S.
July 5, 1915...	0 4	Ma.	0.20	.56	.133	1.0	.002	S.
July 6, 1915...	0 0	M.	0.21	.55	.135	.9	0.000	S.
July 8, 1915...	—0 3	M.	0.23	.52	.134	1.0	—0.001	S.
Sept. 10, 1915...	—0 18	S.	+0.87	—0.41	.123	.8	—0.008	S.
Nov. 17, 1915...	0 0	P.	1.55	.94	.132	.7	+0.002	S.
Nov. 27, 1915...	+0 19	M.	1.65	.92	.137	.6	.007	S.

Normal Equations:

$$+8.300\,c - 0.086\,\mu + 0.102\,\pi = -1.111.$$
$$+13.077 + 1.055 = +0.034.$$
$$+3.920 = -0.017.$$

Solution:

$$c = -0''.134.$$
$$\mu = +0''.009 \pm 0''.005.$$
$$\pi = -0''.006 \pm 0''.009.$$

p. e. unit weight, $\pm 0''.017$.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
4	—157.6	—209.9	+0.756	0.55	+46°.3325
8	24.8	+ 65.7	—0.636	0.50	
9	+ 30.6	48.9	+0.072	0.42	+45°.3563
10	151.7	95.3	.808	0.48	+45°.3567
π	21.3	—120.1		0.54	+45°.3562

No. 46. B.D. + 45°.3566. ($21^h\ 26^m.8$; + 46° 5′.7.) Mag. 8.2.

The measures are in right ascension. No other parallax has been published.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt,, p,	Res., v.	Measured by.
Sept. 22, 1914...	—0 29	M.	—2.65	—0.61	+0.132	.8	+0.006	S.
Nov. 2, 1914...	+0 6	P.	2.24	.92	.144	.7	—0.005	S.
June 22, 1915...	+0 5	M.	+0.08	+0.72	.145	.8	—0.002	S.
June 24, 1915...	0 2	M.	0.10	.70	.146	1.0	.003	S.
June 28, 1915...	—0 1	Ma.	0.14	.66	.158	.8	.015	S.
July 5, 1915...	0 4	Ma.	0.21	.56	.131	.8	+0.012	S.
July 8, 1915...	0 3	M.	0.24	.52	.137	.9	.006	S.
Sept. 10, 1915...	—0 18	S.	+0.88	—0.41	.142	.8	+0.003	S.
Nov. 17, 1915...	0 0	P.	1.56	.94	.139	.8	.007	S.
Nov. 27, 1915...	+0 19	M.	1.66	.92	.158	.5	—0.012	S.

Normal Equations:

$$+7.900\,c - 0.246\,\mu + 0.048\,\pi = +1.127.$$
$$+13.192 + 0.907 = -0.009.$$
$$+3.902 = +0.010.$$

Solution:

$$c = +0''.143.$$
$$\mu = +0''.009 \pm 0''.007.$$
$$\pi = +0''.002 \pm 0''.014.$$

p. e. unit weight, ± 0″.027.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
1	+112.5	+135.4	+0.323	0.54	+46°.3565
3	— 92.7	—184.4	1.259	0.54	+46°.3331
4	164.5	128.1	—0.885	0.55	+46°.3325
10	+144.8	+177.1	+0.303	0.48	+45°.3567
π	109.3	— 21.1		1.00	+45°.3566

No. 47. B.D. + 29°.4550. Lalande 42883–5. ($21^h\ 54^m.2$; + 29° 21′.) Mag. 7.3. $\mu = -0^s.0295$; $-0''.378$.

The measures are in right ascension. Other published parallaxes are:

Flint, $+0''.080 \pm 0''.027$.
Gill, $+0''.274 \pm 0''.017$.
Elkin, $+0''.124 \pm 0''.019$.
Chase, $+0''.020 \pm 0''.043$.
Adams, $+0''.066$.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt,, p,	Res., v.	Measured by.
Oct. 11, 1915...	—0 23	P.	—3.20	—0.74	+0.021	.7	—0.004	Sm.
Oct. 21, 1915...	+0 2	M.	3.10	.82	.016	.8	.002	Sm.
Oct. 30, 1915...	0 17	Ma.	3.01	.87	.016	1.0	.003	Sm.
June 30, 1916...	—0 2	Ma.	—5.57	+0.70	—0.017	.7	—0.008	Sm.
July 7, 1916...	+0 18	Ma.	0.50	.62	.035	.8	+0.009	Sm.
July 11, 1916...	0 48	M.	0.46	.57	.028	.9	0.000	Sm.
July 28, 1916...		Ma.	0.29	.34	.044	.6	+0.011	Sm.
Oct. 7, 1916...	+0 16	Ma.	+0.42	—0.70	—0.046	.6	—0.008	Sm.
Oct. 26, 1916...	0 52	M.	0.61	.86	.066	.8	+0.007	Sm.
Nov. 2, 1916...	0 30	M.	0.68	.90	.065	.8	.004	Sm.
June 25, 1917...	—0 9	M.	+3.03	+0.75	—0.100	.7	+0.005	Sm.
June 30, 1917...	0 52	P.	3.08	.71	.084	.8	—0.013	Sm.
July 27, 1917...	+0 8	Ma.	3.35	.35	.103	.5	.001	Sm.

Normal Equations:

$$+9.7000\,c - 1.5730\,\mu - 0.9010\,\pi = -0.3691.$$
$$+44.9849 \quad +8.3282 = -0.7656.$$
$$+5.0824 = -0.0910.$$

Solution:

$$c = -0''.041.$$
$$\mu = -0''.093 \pm 0''.004.$$
$$\pi = +0''.034 \pm 0''.011.$$

p. e. unit weight, $\pm 0''.021$.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
2	—152.8	— 74.0	+0.344	0.53	
3	140.0	+123.2	.204	0.37	
6	+142.2	140.0	.155	0.74	+29°.4558
9	198.8	— 72.8	.297	0.49	
π	0.0	0.0		0.70	+29°.4550

No. 48. B.D. + 69°.1228. Σ 2883. ($22^h\ 8^m.4$; + 69° 38′.)
Mag. 5.54. $\mu = -0^s.0106$; + 0″.018. Spectrum F.

The measures are in right ascension. The brighter component only was measured. No other parallax has been published.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt., p,	Res., v.	Measured by.
Nov. 9, 1915...	+0 32	Ma.	—3.33	—0.91	—0.073	.9	—0.006	Sm.
Nov. 21, 1915...	0 5	M.	3.21	.92	.075	1.0	.005	Sm.
Nov. 26, 1915...	0 30	P.	3.16	.93	.087	.9	+0.006	Sm.
June 30, 1916...	+0 19	Ma.	—0.99	+0.73	.077	1.0	+0.003	Be.
July 7, 1916...	0 28	Ma.	0.92	.67	.077	.6	.002	Be. Sm.
Oct. 11, 1916...	—0 16	P.	+0.04	—0.70	.113	.5	+0.006	Be.
Nov. 7, 1916...	+0 19	M.	0.31	.90	.117	1.0	.004	Sm.
June 30, 1917...	—0 29	P.	+2.66	+0.73	.114	.6	+0.007	Sm.
June 30, 1917...	0 17	P.	2.66	.73	.101	.9	—0.006	Sm.
July 30, 1917...	0 58	P.	2.96	.36	.113	.9	.003	Sm.
July 30, 1917...	0 44	P.	2.96	.36	.114	.7	.002	Sm.

Normal Equations:

$$+9.0000\,c - 1.5370\,\mu - 1.0230\,\pi = -0.8565.$$
$$+55.4880 + 11.5575 = -0.1738.$$
$$+5.2340 = +0.0777.$$

Solution:

$$c = -0''.095.$$
$$\mu = -0''.043 \pm 0''.003.$$
$$\pi = +0''.078 \pm 0''.010.$$

p. e. unit weight, ± 0″.016.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
1	+178.0	+ 91.2	+0.262	0.64	+69°.1231
6	114.0	—182.4	.277	0.77	+69°.1230
10	—104.8	+ 37.6	.239	0.62	+69°.1227
12	238.4	81.2	.222	0.86	+69°.1219
π	0.0	0.0		0.64	+69°.1228

No. 49. B.D. + 29°.4741. η Pegasi. ($22^h\ 38^m.3$; + 29° 42′.)
Mag. 3.10. $\mu = +0^s.0008$; — 0″.035. Spectrum G.

The measures are in longitude. This star is a spectroscopic binary. Other published parallaxes are:

Flint, — 0″.037 ± 0″.027.
Schlesinger, — 0″.002 ± 0″.013.
Adams, + 0″.042.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, T.	Parallax Factor, P.	Solution, m.	Wt,, p,	Res., v.	Measured by.
Oct. 25, 1915...	+0 5	P.	—3.44	—0.598	+0.187	.5	0.000	Sm.
Dec. 1, 1915...	0 22	P.	3.07	.949	.192	1.0	—0.004	Be.
Dec. 14, 1915...	0 54	M.	2.94	.983	.184	1.0	+0.004	Be.
Aug. 6, 1916...	—1 0	M.	—0.58	+0.651	.202	1.0	—0.012	Be. Sm.
Aug. 13, 1916...	+0 24	P.	0.51	.555	.184	.8	+0.006	Be.
Aug. 15, 1916...	0 29	P.	0.49	.524	.178	.8	.012	Sm.
Nov. 7, 1916...	0 36	M.	+0.35	—0.768	.191	.8	+0.001	Be. Sm.
Dec. 17, 1916...	1 11	M.	0.75	.984	.186	1.0	.007	Be.
Dec. 19, 1916...	1 11	M.	0.77	.982	.202	.9	—0.009	Sm.
July 30, 1917...	—0 35	P.	+3.00	+0.740	.199	.6	—0.005	Sm.
Aug. 5, 1917...	0 42	P.	3.06	.666	.188	.9	+0.006	Sm.
Aug. 10, 1917...	1 21	P.	3.11	.599	.201	.5	—0.007	Sm.

Normal Equations:

$$+9.8000\,c - 1.2780\,\mu - 1.8561\,\pi = +1.8708.$$
$$+44.5793 + 8.4866 = -0.1926.$$
$$+6.1507 = -0.3488.$$

Solution:

$$c = +0''.191$$
$$\mu = +0''.006 \pm 0''.004.$$
$$\pi = -0''.004 \pm 0''.012.$$

p. e. unit weight, ± 0″.024.

Comparison Stars.

No.	X.	Y.	Dependence.	Diameter.	B. D. No.
2	+188.4	+ 25.2	+0.359	0.63	
6	—231.2	186.8	.207	0.59	
11	244.4	— 61.6	.157	0.48	
22	+ 65.6	139.2	.277	0.39	
π	0.0	0.0		1.10	+29°.4741

No. 50. B.D. + 19°.5094. Σ 3007. (23^h $17^m.8$; + 20° 1′.)
Mag. 6.9. $\mu = +0^s.0226$; — 0″.019.

Σ 3007 is a double star, whose components have a common proper motion. The brighter component only was measured. The measures are in longitude. No other parallaxes have been published for this star.

Date.	Hour Angle. h. m.	Obs.	Time in 100 Days, *T.*	Parallax Factor, *P.*	Solution, *m.*	Wt., *p.*	Res., *v.*	Measured by.
Nov. 26, 1915...	+0 54	P.	—3.42	—0.894	+0.048	.5	+0.002	Sm.
Dec. 26, 1915...	1 38	M.	3.12	.979	.059	.6	—0.006	Be.
Aug. 13, 1916...	+0 22	P.	—0.81	+0.615	.114	.9	—0.004	Be. Sm.
Aug. 17, 1916...	0 37	P.	0.77	.558	.108	.5	+0.002	Be.
Aug. 19, 1916...	0 13	P.	0.75	.530	.104	.7	.005	Sm.
Nov. 8, 1916...	+0 4	P.	+0.06	—0.731	.093	.8	+0.012	Be. Sm.
Dec. 10, 1916...	0 51	M.	0.38	.970	.116 .116	.7	—0.009	Be. Sm.
Aug. 5, 1917...	—0 38	P.	+2.76	+0.721	.169	.9	—0.003	Be.
Aug. 10, 1917...	0 5	Ma.	2.81	.668	.160	.6	+0.006	Sm.
Aug. 11, 1917...	+0 10	M.	2.82	.644	.168	1.0	—0.002	Sm.

Normal Equations:

$$+7.2000\,c + 2.0830\,\mu + 0.5990\,\pi = +0.8605.$$
$$+32.6194 + 6.8602 = +0.8268.$$
$$+3.9039 = +0.2245.$$

Solution:

$$c = +0''.114.$$
$$\mu = +0''.072 \pm 0''.004.$$
$$\pi = +0''.061 \pm 0''.012.$$

p. e. unit weight ± 0″.019.

Comparison Stars.

No.	*X.*	*Y.*	Dependence.	Diameter.	B. D. No.
1	+237.2	— 97.0	+0.280	0.44	
10	—148.0	+180.0	.334	0.41	
18	50.3	— 33.5	.231	0.30	
20	34.6	162.2	.155	0.36	
π	0.0	0.0		0.64	+19°.5094

Summary of Results. (Second List of Fifty Stars.)

No.	B.D. Number.	Star.	R.A., 1900. h.	m.	Declination, 1900.		Magnitude.	Spectrum.	Relative Parallax.		No. of Plates.	Coördinates.
1	— 4°.62	Ho. 212 = 13 Ceti	0	31.1	— 4°	9′	5.24	F	+0″.048	±0″.010	15	R.A.
2	+37 .175	μ Andromedae*		51.2	+37	57	3.94	A_2	+.032	.013	12	Long.
3	+46 .243	OΣ 21*		57.3	+46	50	6.36	F	+.007	.008	11	Long.
4	+54 .236	Θ Cassiopeia*	1	5.0	+54	37	4.52	A_5	—.003	.003	12	Long.
5	+49 .444	ϕ Persei*		37.4	+50	11	4.19	B_p	+.021	.010	12	R.A.
6	+ 1 .347	Σ 186*		50.7	+ 1	21	6.18	F	+.042	.006	11	Long.
7	+41 .395	γ^1 (A) Andromedae*		57.8	+41	51	2.28	K_p	+.021	.014	15	Long.
		γ^2 (BC) Andromedae*					5.08		+.005	.008	14	Long.
8	+67 .191	Bradley 3227*	2	7.5	+67	13	7.8	K	+.052	.010	18	Long.
9	+24 .375	Bradley 360*		31.2	+24	12.8	7.3	F	+.030	.005	13	Long.
	+24 .376	Bradley 361					6.9	F_5	+.034	.004	13	Long.
10	+49 .857	ι Persei	3	2.0	+49	14	4.1	G	+.120	.012	12	Long.
11	+ 0 .542	Σ 367*		9.0	+ 0	21.7	8.0		+.026	.008	11	Long.
12	+31 .642	o Persei = β 535*		38.0	+31	58	4.0	B_1	+.030	.006	12	Long.
13	+34 .796	Greenwich$_{00}$ 284*		56.5	+35	2	8.5		+.072	.005	12	Long.
14	+53 .794	Σ 566	4	32.0	+53	16.6	5.44	A	+.021	.007	16	Long.
15	+53 .3796	Δ 4		32.5	+53	17	8.8		+.004	.007	16	Long.
		Δ 4′					9.8		—.003	.009	16	Long.
16	+45 .992	Groombridge 884*		44.4	+45	41	6.5		+.072	.012	13	Long.
17	— 5 .1123	Weisse 4^h.1189		55.9	— 5	52	6.5	K	+.103	.012	12	Long.
18	+ 8 .866	OΣ 98 = 14 Orionis	5	2.5	+ 8	22	6.0	F	+.016	.012	12	Long.
19	+39 .1248	λ Aurigae = Σ 3		12.1	+40	1	4.85	G	+.070	.007	12	Long.
20	— 3 .1123	Weisse I 5^h.592*		26.4	— 3	42	8.7	M_a	+.146	.014	13	Long.
21	—13 .2267	β 101 = 9 Argus*	7	47.1	—13	38	5.6	F_8	+.121	.009	13	R.A.
22	+27 .1589	χ Cancri*	8	14	+27	33	5.16	F	+.060	.006	13	R.A.
23	+42 .1922	Σ 1263* = Lalande 17161		38.6	+42	3	8.5		+.104	.011	13	R.A.
24	+42 .2214	OΣ 234*	11	26.2	+41	52	7.0		+.038	.011	15	R.A.
25	+28 .2106	Bradley 1646	12	14.5	+28	43	6.3	F	+.048	0.11	13	R.A.
26	+26 .2345	Σ 1639		19.4	+26	8	6.7	A_5	—.028	.014	14	R.A.

SUMMARY OF RESULTS. (SECOND LIST OF FIFTY STARS.)—*Concluded.*

No.	B.D. Number.	Star.	R.A., 1900. h.	m.	Declination, 1900.		Magnitude.	Spectrum.	Relative Parallax.		No. of Plates.	Coördinates.
27	+10°.2466	33 Virginis = Br 1706		41.3	+10°	6′	5.86	K	−0″.018	±0″.012	20	Long.
28	+17 .261	β 800	13	11.9	+17	33	7.0		+ .070	.010	12	R.A.
29	+35 .2462	OΣ 269*		28.3	+35	25	7.2		+ .067	.012	13	R.A.
30	+30 .2653	η Coronae Borealis*	15	19.1	+30	39	5.58	G	+ .085	.008	13	R.A.
31	+ 2 .3118	λ Ophiuchi*	16	25.9	+ 2	12	3.85	A	− .0037	.005	12	Long.
32	+32 .2896	72 w Herculis	17	16.9	+32	36	5.36	G	+ .064	.009	15	Long.
33	− 0 .33	Σ 2173*		25.2	− 0	59	5.34	G	+ .051	.009	13	Long.
34	+30 .3128	99 b Herculis*	18	3.2	+30	33	5.21	F_8	+ .043	.010	13	Long.
35	+38 .3466	Σ 2481 (π)*	19	7.7	+38	36	8.0		+ .016	.009	12	Long.
		Secchi 2 (π′)*					8.0		− .011	.009	12	Long.
36	+27 .3391	Σ 2525*		22.5	+27	7	7.5	G	+ .013	.013	12	Long.
37	+50 .2847	16 Cygni Pre. Comp.*		39.1	+50	18	6.26	F	+ .037	.012	14	Long.
	+50 .2848	16 Cygni Foll. Comp.*					6.37		+ .018	.006	14	Long.
38	+34 .3727	OΣ 387*				35 4	6.9	F_2	+ .015	.012	14	Long.
39	+ 6 .4357	β Aquilae = OΣ 532*		50.4	+ 6	9	3.90	K	+ .067	.011	13	Long.
40	+20 .4453	Σ 2637 = Θ Sagittae A*	20	5.5	+20	37	7.0		+ .019	.004	9	Long.
	+20 .4453	Σ 2637 B*					8.3		+ .007	.009	12	Long.
	+20 .4452	Σ 2637 C*					7.8		+ .022	.011	12	Long.
41	+43 .3513	OΣ 400*		6.9	+43	39	7.5		+ .043	.007	11	Long.
42	+15 .4255	γ Delphini A	20	42.0	+15	46	4.49	G_5	+ .007	.010	14	R.A.
		γ Delphini B					5.47		− .008	.015	15	R.A.
43	+ 3 .4473	Σ 2737 = ε Equulei*		54.1	+ 3	55	5.29	F_5	+ .018	.012	12	Long.
44	+45 .3558	71g Cygni*	21	25.8	+46	6	5.35	K	+ .027	.008	11	R.A.
45	+45 .3562			26.1	+46	7.2	9.5		− .006	.009	10	R.A.
46	+45 .3566			26.8	+46	5.7	8.2		+ .002	.014	10	R.A.
47	+29 .455	Lalande 42883 — 5		54.2	+29	21	7.3		+ .034	.011	13	R.A.
48	+69 .1228	Σ 2883*	22	8.4	+69	38	5.54	F	+ .078	.010	11	R.A.
49	+29 .4741	η Pegasi*		38.3	+29	42	3.10	G	− .004	.012	12	Long.
50	+19 .5094	Σ 3007*	23	17.8	+20	1	6.9		+ .061	.012	10	Long.

The comparison fields were chosen by method described in *Sproul Pub. No. 4* for those stars marked with asterisk.